Mode d'emploi TEST.IT.CARD

WeTec IT

Pro Tools Vertrieb

Wiesenstraße 15
-85416 Langenbach
Germany

E-Mail: info@protoolsvertrieb.de
bestellung@protoolsvertrieb.de

Internet: www.protoolsvertrieb.de

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Introduction

Nous vous remercions d'avoir acheté cette carte de diagnostic WeTec IT. Vous disposez maintenant d'une des cartes de diagnostic passive les plus efficaces du marché. Cette documentation a pour but de vous familiariser avec le fonctionnement de cette carte de diagnostic.

Voici quelques avantages de la carte TEST.IT.CARD :

- Utilisation universelle (slot ISA et slot PCI)
- Un haut-parleur intégré permet d'émettre un signal sonore même lorsque le haut-parleur de votre ordinateur est défectueux, ou lorsque les fabricants de BIOS n'ont pas prévu de messages d'erreurs autres que des signaux sonores.
- plusieurs LED pour l'affichage des différents signaux système et des tensions d'alimentation (p. ex. RESET, CLK, etc.).
- Affichage des codes P.O.S.T.
- Aucune configuration nécessaire du plug court-circuit ("jumper")
- Analyse des erreurs en 30 secondes

Contenu

Vous devez trouver dans la boîte de la TEST.IT.CARD :

- TEST.IT.CARD DUAL-POST ISA/PCI
- Manuel d'utilisation

Configuration système minimum requise :

Pour utiliser cette carte de diagnostic, vous devez disposer d'un PC avec un slot PCI ou ISA libre.

Soyez attentifs aux points suivants :

- N'installez jamais la carte sur un PC allumé. Étant donné le fait que de nombreux PC restent actifs même en mode officiellement "éteint" (le système d'exploitation peut être éteint - veille prolongée, par exemple - alors que l'ordinateur n'est pas débranché de l'alimentation secteur 230 V), il est vivement recommandé, pour des raisons de sécurité, de débrancher la fiche d'alimentation secteur située à l'arrière du boîtier ou, s'il n'en existe pas, de débrancher simplement l'alimentation de la prise murale, afin de séparer l'ordinateur physiquement de l'alimentation électrique. Ceci est déjà fortement conseillé pour des raisons de sécurité.

Attention : même lorsque vous installez la carte dans un slot ISA, il est important d'effectuer une installation correcte. Pour cela, veuillez tenir compte de la flèche marquée sur la carte ("Rear ISA BUS"), laquelle doit être orientée vers l'arrière du boîtier. Cela peut paraître banal, mais avec une carte mère combo équipée de slots PCI et ISA, la face de la carte PCI où sont assemblés les composants est orientée dans le sens opposé à celui de la face de la carte ISA où sont assemblés les composants. Cela signifie que la tentation peut être grande de brancher une carte PCI à l'envers. Soyez vigilant ! Un mauvais montage de la carte peut endommager la carte ou le matériel de votre PC.

ATTENTION : des décharges électrostatiques peuvent endommager la carte TEST.IT.CARD. Manipulez la carte TEST.IT.CARD (ainsi que tous les autres composants de votre PC, bien entendu) avec précaution lorsque vous l'installez, et évitez tant que possible les contacts inutiles avec d'autres composants système. Si possible, veuillez toujours travailler sur une surface antistatique (tapis antistatique), et avec un bracelet antistatique, afin d'éviter tout risque d'endommagement.

P.O.S.T. (Power-On-Self-Test)

Le P.O.S.T (Power-On-Self-Test) est un programme et une partie du système BIOS. Au démarrage du système, il détermine les composants disponibles dans le PC et vérifie leur bon fonctionnement en effectuant un auto-test que chaque composant correspondant effectue lui-même. Le Power-On- Self-Test se termine au plus tard au moment du processus de démarrage, du boot.

Il convient de noter que le déroulement POST dépend entre autres du fait qu'il s'agit d'un démarrage à froid ou d'un démarrage à chaud. Lors d'un démarrage à chaud (CTRL-ALT-SUPPR, ou redémarrage du système d'exploitation), la plupart des BIOS laissent de côté le test de la mémoire. Seul un "vrai" arrêt puis un démarrage du système (ou une pression sur le bouton RESET) permet au système d'effectuer un test complet.

Astuce : désactivez ('Disabled") le point de menu "QUICK POWER-ON-SELF-TEST" disponible dans de nombreux programmes de configuration du système BIOS (chez AWARD, par ex.). Vous désactiverez ainsi certains tests, tel que le test mémoire, p. ex. Und auf die paar Sekunden mehr kommt es, in den meisten Fällen wenigstens, nicht an...

Note : dans certaines variantes des BIOS système (p. ex. HP à quelques exceptions près), aucun numéro de test hexadécimal ne peut être émis.

Messages d'erreur du POST

Le Power-On-Self-Test peut signaler de différentes façons les erreurs, ou les tests qui n'ont pas été exécutés correctement :

1. optique (via l'écran)
2. acoustique (via le haut-parleur)
3. via les ports I/O

La carte TEST.IT.CARD convient parfaitement pour évaluer les points 2 et 3. Pour le P.O.S.T., la TEST.IT.CARD supporte les ports I/O 80h et 84h (ce dernier est utilisé p. ex. par des PC de la marque Compaq).

Étant donné le fait que le P.O.S.T. est une partie du système BIOS, il s'avère toujours utile de connaître le fabricant du BIOS (du moins le nom de la marque et la version, comme p. ex. AWARD-BIOS v4.51), car seules ces informations permettent d'évaluer correctement les messages d'erreur dans la documentation correspondante.

Affichages de la TEST.IT.CARD

La carte TEST.IT.CARD dispose de différentes options d'affichage :

- Écran double à 7 segments, sur la carte
- Haut-parleur intégré

* La LED pour la tension +3,3 V sert lors de l'utilisation d'un slot PCI. Pour l'utilisation d'un slot ISA, qui ne reconnaît pas la tension +3,3 V, la LED sert alors pour la tension ISA -5 V.

Sur les afficheurs à 7 segments s'affichent les tests qui n'ont pas pu être effectués correctement.

Le résultat est exprimé en chiffres hexadécimaux, dans une plage allant de 00h à FFh. L'évaluation de la valeur Hex s'effectue à l'aide des tableaux dans les sections correspondantes de cette documentation.

Dans le cas où le PC ne possède aucun haut-parleur, ou si celui-ci est défectueux, la carte TEST.IT.CARD dispose d'un haut-parleur Piezo intégré.

Définitions des signaux PCI et ISA

CLK	Signal de l'horloge (clock) : signal d'horloge de la carte système
BIOS	BIOS-Read-Signal (signal de lecture BIOS) : clignote lorsque le processeur (CPU) lit le BIOS système
IRDY	Initiator Ready-Signal (initiateur de signal "ready")
OSC	Signal d'horloge 14.31818 MHz
FRAME	Signal FRAME
RST	Signal RESET, max. 500 ms après mise sous tension "ON"
+12V	Tension d'alimentation +12 V
-12 V	Tension d'alimentation -12 V
+5V	Tension d'alimentation +5 V
-5V*	Tension d'alimentation -5 V (uniquement pour ISA)
+3.3V	Tension d'alimentation +3.3 V (uniquement pour PCI)

* lors de l'utilisation de composants ISA, la LED +3,3V est utilisée pour la vérification de la tension ISA -5V !

Toutes les ampoules mentionnées ci-dessus doivent normalement briller, ou clignoter. Pour des slots PCI plus anciens (tels que PCI Rev. v2.0, jusqu'en 1997 env., et PCI Rev. v2.1 jusqu'en 1999), il se peut que la tension d'alimentation +3.3 V manque. Dans ce cas, la LED reste éteinte, il ne s'agit pas d'un défaut matériel. La tension +3.3V est nécessaire à partir du niveau de révision v2.2.

On trouve souvent ces anciennes cartes mères avec des adaptateurs secteurs AT (pas ATX) ; par conséquent, la tension de +3.3 V n'est pas fournie par l'alimentation secteur, mais générée par la carte mère.

Contrairement à presque toutes les LED, la LED RESET ne s'allume qu'au moment où le signal RESET émet une requête (au moment de l'allumage du PC, par ex., lorsqu'on appuie sur le bouton RESET, ou lors d'une baisse ou absence du signal POWER-GOOD, dans le cas de fluctuations de tension en dehors de la tolérance admise).

Dans le cas de l'arrêt de l'horloge d'un slot PCI, le DualPOST ne peut alors, dès cet instant, décoder aucune information supplémentaire, ceci
dépend de la disposition de la carte système et ne représente pas une erreur de fonctionnement des composants PCI du DualPOST.

Sur certaines cartes mères, l'horloge peut être désactivée dans le programme de configuration (SETUP) du BIOS, de la façon suivante par exemple : "Frequency/Voltage Control" -> "Auto Detect DIMM/PCI CLK" -> "Disabled".

Codes POST

Dans les pages qui vont suivre, vous trouverez les codes P.O.S.T. hexadécimaux (messages d'erreurs des tests) des principaux fabricants. Nous avons approfondi un peu le sujet car la TEST.IT.CARD peut également tester les cartes ISA ou cartes BUS XT 8 bits, et car il se peut que vous (ou un technicien) souhaitiez vérifier des PC plus anciens.
Veuillez noter que certains fabricants de PC disposent de licences pour des systèmes de BIOS fabriqués par d'autres entreprises (bien sûr, certaines marques conçoivent également leurs propres firmwares), comme c'est le cas pour la marque DELL, qui utilise des BIOS Phoenix, par exemple.

Acer BIOS

04	CPU verification; POST start / CPU-Belegung
08	Shutdown condition 0; Shutdown byte 0
0C	BIOS ROM checksum tested / BIOS Rom wird geprüft
10	CMOS ROM shutdown byte tested / CMOS ROM Shutdown wird geprüft
14	DMA controller tested / DMA Kontroller wird geprüft
18	System timer initialized / Systemzeit wird initalisiert
1C	Memory refresh system tested / Systemspeicher wird geprüft
1E	Memory type determined / Speicher wird bestimmt
20	Base 128K memory tested / untere 128K des Speichers warden geprüft
24	8042 keyboard controller tested / Tastatur Kontroller wird geprüft
28	CPU descriptor instruction tested / Prozessor instruction wird geprüft
2C	8259 PIT tested / PIT wird geprüft
30	Temporary Interrupts located and initialized / Lokalisation sowie Initalisierung der Interrupts
34	BIOS Interrupt vectors and routines configured / BIOS Interrupt routinen warden konfiguriert
38	CMOS RAM tested / CMOS Speicher wird geteprüft
3C	Memory size determined / Speichergröße wird gemessen
40	Shutdown condition 1 / Runterfahren 1
44	Video BIOS ROM initialized / Video BIOS ROM initaliesiert
45	RAM initialized and tested / Speicher initaliesierung und prüfung
46	Cache memory and controller initialized and tested / Cache Speicher und Kontroller initaliersiert und prüfung
48	Memory tested / Speicher Test
4C	Shutdown condition 3 / Runterfahren 3
50	Shutdown condition 2 / Runterfahren 2
54	Shutdown condition 7 / Runterfahren 7
58	Shutdown condition 6 / Runterfahren 6
5C	Keyboard and auxiliary I/O tested / Tastatur prüfung I/O
60	BIOS Interrupt routines setup / BIOS Interrups warden aufgebaut
64	RTC tested / RTC Test
68	Floppy drive and controller tested / Diskettenlaufwerk und desen Kontroller test
6C	Hard drive and controller tested / Festplatten und desen Kontroller test
70	Parallel port tested / Parallel-Anschlüsse Test
74	Serial port tested / Serial-Anschlüsse Test
78	Time of day setup / Tageszeitaufbau
7C	Optional ROM's searched for and started / Optionales ROM wird durchsucht und gestartet
80	Math coprocessor tested / Mathematikprozessort test
84	Keyboard tested / Tastatur test
88	System initialized / System initaliersiert
8C	System initialized / System initaliersiert
90	Operating system boot process started / Der System-Start-Prozess test
94	Shutdown condition 5 / Runterfahren 5
98	Shutdown condition A / Runterfahren A
9C	Shutdown condition B / Runterfahren B

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ALR BIOS

01	CPU register test in progress
02	Real-time clock write/read failure
03	ROM BIOS checksum failure
04	Programmable internal timer failure (or no video card present)
05	DMA initialization failure
06	DMA page register write/read failure
08	RAM-refresh verification failure
09	1st 64KB RAM test in progress
0A	1st 64KB RAM chip or data line multi-bit failure
0B	1st 64KB RAM odd/even logic failure
0C	Address line failure 1st 64KB RAM
0D	Parity failure 1st 64KB RAM
10-1F	bit 0-15 64KB RAM failure
20	Slave DMA-register failure
21	Master DMA-register failure
22	Master-interrupt mask-register failure
23	Slave-interrupt mask-register failure
25	Interrupt vector loading in progress
27	Keyboard-controller test failure
28	RTC power failure and checksum calculation in progress
29	Real-time clock-configuration validation in progress
2B	Screen-memory test failure
2C	Screen-initialization failure
2D	Screen-retrace test failure
2E	Search believed operational on screen believed running with video ROM
30	Monochrome display believed operable
32	Color display (40 column) believed operable
33	Color display (80 column) believed operable

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AMI BIOS (vor April 1990)

01	NMI is disabled and the i286 register test is about to start
02	i286 register test has passed
03	ROM BIOS checksum test (32Kb from F8000h) passed OK
04	8259 programmable interrupt controller has initialized OK
05	CMOS interrupt disabled
06	Video system disabled and the system timer checks OK
07	8253/4 programmable-interval timer test OK
08	Delta counter channel 2 OK
09	Delta counter channel 1 OK
0A	Delta counter channel 0 OK
0B	Parity status cleared
0C	The refresh and system timer check OK
0D	Refresh check OK
0E	Refresh period checks OK
10	Ready to start 64KB base memory test
11	Address line test OK
12	64KB base memory test OK
13	System-interrupt vectors initialized
14	8042 keyboard controller checks OK
15	CMOS read/write test OK
16	CMOS checksum and battery OK
17	Monochrome video mode OK
18	CGA color mode set OK
19	Attempting to pass control to video ROM at C0000h
1A	Returned from video ROM
1B	Display memory read/write test OK
1C	Display memory read/write alternative test OK
1D	Video retrace test OK
1E	Global equipment byte set for proper video operation
1F	Ready to initialize video system
20	Video test OK
21	Video display OK
22	The power-on message is displayed
30	Ready to start the virtual-mode memory test
31	virtual memory mode test started
32	CPU has switched to virtual mode
33	Testing the memory address lines
34	Testing the memory address lines
35	Lower 1MB of RAM found
36	Memory size computation checks OK
37	Memory test in progress
38	Memory below 1MB is initialized
39	Memory above 1MB is initialized
3A	Memory size is displayed
3B	Ready to test the lower 1MB of RAM
3C	Memory test of lower 1MB OK
3D	Memory test above 1MB OK
3E	Ready to shutdown for real-mode testing
3F	Shutdown OK- now in real mode
40	Ready to disable gate A20
41	A20 line disabled successfully
42	Ready to start DMA controller test
4E	Address line test OK
4F	System still in real mode
50	DMA page register test OK
51	Starting DMA controller 1 register test
52	DMA controller 1 test passed, starting DMA controller 2 register test

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53	DMA controller 2 test passed
54	Ready to test latch on DMA controller 1 and 2
55	DMA controller 1 and 2 latch test OK
56	DMA controller 1 and 2 configured OK
57	8259 programmable interrupt controller initialized OK
58	8259 programmable interrupt controller mask register OK
59	Master 8259 programmable interrupt controller mask register OK
5A	Ready to check timer interrupts
5B	Timer interrupt check OK
5C	Ready to test keyboard interrupt
5D	Error detected in timer or keyboard interrupt
5E	8259 programmable interrupt controller error
5F	8259 programmable interrupt controller OK
70	Start of keyboard test
71	Keyboard controller Ok
72	Keyboard tested OK
73	Keyboard global initialization OK
74	Floppy setup ready to start
75	Floppy controller setup OK
76	Hard disk setup ready to start
77	Hard disk controller setup OK
79	Ready to initialize timer data
7A	Verifying CMOS battery power
7B	CMOS battery verified OK
7D	Analyzing CMOS RAM size
7E	CMOS memory size updated
7F	Send control to adapter ROM
80	Enable the setup routine if <Delete> is pressed
82	Printer data initialization is OK
83	RS-232 data initialization is OK
84	80x87 check and test OK
85	Display any soft-error message
86	Give control to ROM E0000h
87	Return from system ROM
00	Call the Int19 boot loader

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AMI BIOS (nach April 1990)

01	NMI is disabled and the i286 register test is about to start
02	i286 register test has passed
03	ROM BIOS checksum test (32KB from E8000h) passed OK
04	Passed keyboard controller test with and without mouse
05	Chipset initialized...DMA and interrupt controller disabled
06	Video system disabled and the system timer checks OK
07	8254 programmable interval timer initialized
08	Delta counter channel 2 initialization complete
09	Delta counter channel 1 initialization complete
0A	Delta counter channel 0 initialization complete
0B	Refresh started
0C	System timer started
0D	Refresh check OK
10	Ready to start 64KB base memory test
11	Address line test OK
12	64KB base memory test OK
15	ISA BIOS interrupt vectors initialized
17	Monochrome video mode OK
18	CGA color mode set OK
19	Attempting to pass control to video ROM at C0000h
1A	Returned from video ROM
1B	Shadow RAM enabled
1C	Display memory read/write test OK
1D	Alternate display memory read/write test OK
1E	Global equipment byte set for proper
1F	Ready to initialize video system
20	Finished setting video mode
21	ROM type 27256 verified
22	The power-on message is displayed
30	Ready to start the virtual mode memory test
31	Virtual memory mode test started
32	CPU has switched to virtual mode
33	Testing the memory address lines
34	Testing the memory address lines
35	Lower 1MB of RAM found
36	Memory size computation checks OK
37	Memory test in progress
38	Memory below 1MB is initialized
39	Memory above 1MB is initialized
3A	Memory size is displayed
3B	Ready to test the lower 1MB of RAM
3C	Memory test of lower 1MB OK
3D	Memory test above 1MB OK
3E	Ready to shutdown for real-mode testing
3F	Shutdown Ok - now in real mode
40	Cache memory now on...Ready to disable gate A 20
41	A20 line disabled successfully
42	i486 internal cache turned on
43	Ready to start DMA controller test
50	DMA page register test OK
51	Starting DMA controller 1 register test
52	DMA controller 1 test passed, starting DMA controller 2 register test
53	DMA controller 2 test passed
54	Ready to test latch on DMA controller 1 and 2
55	DMA controller 1 and 2 latch test OK
56	DMA controller 1 and 2 configured OK
57	8259 programmable interrupt controller initialized Ok

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70	Start of keyboard test
71	Keyboard controller OK
72	Keyboard test OK...Starting mouse interface test
73	Keyboard and mouse global initialization OK
74	Display setup prompt.. Floppy setup ready to start
75	Floppy controller setup OK
76	hard disk setup ready to start
77	Hard disk controller setup OK
79	Ready to initialize timer data
7A	Timer data area initialized
7B	CMOS battery verified OK
7E	CMOS memory size updated
7F	Enable setup routine if <Delete> is pressed
80	Send control to adapter ROM at C800h to DE00h
81	Return from adapter ROM
82	Printer data initialization is OK
83	RS-232 data initialization is OK
84	80x87 check and test OK
85	Display any soft error message
86	Give control to ROM at E0000h
A0	Program the cache SRAM
A1	Check for external cache
A2	initialize EISA adapter card slots
A3	Test extended NMI in EISA system
00	Call the INT19 boot loader

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AMI 2.2 BIOS

00	Flag test; Testing of the CPU
03	Register test
06	Chipset test; System hardware initialized
09	BIOS checksum tested
0C	Page register tested
0F	8254 timer tested
12	Memory refresh initialization
15	8237 DMA controllers tested
18	8237 DMA initialization
1B	8259 PIC initialization
1E	8259 PIC chips tested
21	Memory refresh tested
24	Base 64 address tested
27	Base 64 memory tested
2A	8742 keyboard tested
2D	MC146818 RTC/CMOS
30	Protected mode started
33	Memory sizing test
36	First protected mode test passed
39	First protected mode test failed
3C	CPU speed calculation
3F	Read 8742 hardware switches
42	Initialize interrupt vector area
45	Verify CMOS configuration
48	Test and initialize video system
4B	Unexpected interrupt tested
4E	Start second protected mode test
51	Verify LDT instruction
54	Verify TR instruction
57	Verify LSL instruction
5A	Verify LAR instruction
5D	Verify VERR instruction
60	Address line A20 test
63	Unexpected exception tested
66	Start third protected mode test
69	Address line tested
6A	Scan DDNIL bits for null pattern
6C	System memory tested
6F	Shadow memory tested
72	Extended memory tested
75	Verify memory configuration
78	Display CMOS error messages
7B	Copy system BIOS shadow memory
7E	8254 clock tested
81	MC146818 RTC tested
84	Keyboard test
87	Determine keyboard type
8A	Stuck key test
8D	Initialize hardware Interrupt vectors
90	Math co-processor tested
93	Determine COM ports available
96	Determine LPT ports available
99	Initialize BIOS data area
9C	Fixed/floppy controller tested
9F	Floppy disk tested
A2	Fixed disk tested
A5	External ROM screen; Check for external ROM's

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A8	System key lock test
AE	F1 error message test
AF	System boot initialization
B1	Call to Interrupt 19 boot loader

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AMI Plus BIOS

00	Control to Interrupt 19
01	NMI disabled (Bit 7 of I/O port 70h)
02	286 register test over
03	ROM checksum OK
04	8259 PIC initialization disabled
05	CMOS Interrupt disabled
06	System timer (PIT) counting OK
07	Channel 0 of 8259 PIC test OK
08	DMA channel 2 of delta count test OK
09	DMA channel 1 of delta count test OK
0A	DMA channel 0 of delta test count OK
0B	Parity status cleared (DMA/PIT)
0C	Refresh and system time check OK (DMA/PIT)
0D	Refresh link toggling OK (DMA/PIT)
0E	Refresh period ON/OFF 50% OK
10	About to start 64K memory
11	Address line tested OK
12	64K base memory tested OK
13	Interrupt vectors initialized
14	8042 keyboard controller tested
15	CMOS Read/Write test OK
16	CMOS checksum/battery tested
17	Monochrome mode set OK (6845)
18	Color (CGA) mode set OK (6845)
19	Video ROM search
1A	Optional video ROM OK
1B	Display memory Read/Write test OK
1C	Alternate display memory OK
1D	Video retrace check Ok
1E	Global byte set for video Ok
1F	Mode set for mono/color OK
20	Video test OK
21	Video display OK
22	Power on message display OK
30	Readying virtual mode memory test
31	Virtual mode memory test started
32	Processor in virtual mode
33	Memory address line test
34	Memory address line test
35	Memory below 1MB calculated
36	Memory size computation OK
37	Memory test in progress
38	Memory initialization below 1MB
39	Memory initialization above 1MB
3A	Display memory size
3B	Ready to start memory below 1MB
3C	Memory test below 1MB OK
3D	Memory test above 1MB OK
3E	Ready to switch to real mode
3F	Shutdown successful
40	Ready to disable gate A-20 (8042)
41	Gate A-20 disabled (8042)
42	About to test DMA controller (8237)
4E	Address line test OK
4F	Processor in real mode
50	DMA page register test OK
51	DMA unit-1 base register OK

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52	DMA unit-1 channel register OK
53	DMA channel-2 base register test OK
54	About to test both units OK
55	F/F latch tests both units OK
56	DMA units 1 & 2 programmed OK
57	8259 PIC initialization OK
58	8259 PIC mask register check OK
59	Master 8259 PIC mask register OK
5A	Check timer and keyboard Interrupt
5B	PIT timer Interrupt OK
5C	About to test keyboard Interrupt
5D	ERROR! Timer/keyboard Interrupt
5E	8259 PIC Interrupt controller error
5F	8259 PIC Interrupt controller test OK
70	Start of keyboard test
71	Keyboard test OK
72	Keyboard test OK
73	Keyboard global data initialize (8042)
74	Floppy controller setup about to start
75	Floppy controller setup OK
76	Hard disk controller setup about to start
77	Hard disk controller setup OK
79	About to initialize timer data
7A	Verify CMOS battery power
7B	CMOS battery verification done
7D	Analyze test results for memory
7E	CMOS memory size update OK
7F	Check optional ROM C0000h
80	Keyboard sensed to enable setup
81	Optional ROM control OK
82	Printer global data init OK
83	RS-232 global data init OK
84	80287 check/test OK
85	About to display soft error
86	Give control to system ROM E0000h
87	System ROM E0000h check over
00	Call to Interrupt 19 for boot loader

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AMI COLOR BIOS

00	Control to Int 19 boor loader
01	CPU flag test
02	Power-on delay
03	Chipset initialization
04	Soft/hard reset
05	ROM enable
06	ROM BIOS checksum
07	8042 keyboard controller tested
08	8042 keyboard controller tested
09	8042 keyboard controller tested
0A	8042 keyboard controller tested
0B	8042 protected mode tested
0C	8042 keyboard controller tested
0D	8042 keyboard controller tested, CMOS
0E	CMOS checksum tested
0F	CMOS initialization
10	CMOS/RTC status OK
11	DMA/PIC disable
12	DMA/PIC initialization
13	Chipset/memory initialization
14	8254 PIT timer tested
15	8254 PIT channel 2 timer tested
16	8254 PIT channel 1 timer tested
17	8254 PIT channel 0 timer tested
18	Memory refresh test (PIC)
19	Memory refresh test (PIC)
1A	Check 15-microsecond refresh (PIT)
1B	Check 30-microsecond refresh (PIT)
20	Base 64K memory tested
21	Base 64K memory parity tested
22	Memory Read/Write
23	BIOS vector table initialization
24	BIOS vector table initialization
25	Turbo check of 8042 keyboard controller
26	Global data table for keyboard controller; turbo
27	Video mode tested
28	Monochrome tested
29	Color (CGA) tested
2A	Parity-enable tested
2B	Optional system ROM's check start
2C	Video ROM check
2D	Reinitialize main chipset
2E	Video memory tested
2F	Video memory tested
30	Video adapter tested
31	Alternate video adapter tested
32	Alternate video adapter tested
33	Video mode tested
34	Video mode tested
35	Initialize BIOS ROM data area
36	Power-on message display
37	Power-on message display
38	Read cursor position
39	Display cursor reference
3A	Display BIOS setup message
40	Start protected mode tested
41	Build mode entry

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42	CPU enters protected mode
43	Protected mode Interrupt enable
44	Check descriptor tables
45	Check memory size
46	Memory Read/Write tested
47	Base 640K memory tested
48	Check 640K memory size
49	Check extended memory size
4A	Verify CMOS extended memory
4B	Check for soft/hard reset
4C	Clear extended memory locations
4D	Update CMOS memory size
4E	Base RAM size displayed
4F	Memory Read/Write test on 640K
50	Update CMOS on RAM size
51	Extended memory tested
52	Re-size extended memory
53	Return CPU to real mode
54	Restore CPU registers
55	A-20 gate disabled
56	BIOS vector recheck
57	BIOS vector check complete
58	Clear BIOS display setup message
59	DMA, PIT tested
60	DMA page register tested
61	DMA #1 tested
62	DMA #2 tested
63	BIOS data area check
64	BIOS data area checked
65	Initialize DMA chips
66	8259 PIC initialization
67	Keyboard tested
80	Keyboard reset
81	Stuck key and batch test
82	8042 keyboard controller tested
83	Lock key check
83	Compare memory size with CMOS
85	Password/soft error check
86	XCMOS/CMOS equipment check
87	CMOS setup entered
88	Reinitialize chipset
89	Display power-on message
8A	Display wait and mouse check
8B	Shadow any option ROM's
8C	Initialize XCMOS settings
8D	Reset hard/floppy drives
8E	Floppy compare to CMOS
8F	Floppy disk controller initialization
90	Hard disk compare to CMOS
91	Hard disk controller initialization
92	BIOS data table check
93	BIOS data check hat halfway
94	Set memory size
95	Verify display memory
96	Clear all Interrupts
97	Optional ROM's check
98	Clear all Interrupts
99	Setup timer data/RS232 base
9A	RS232 test; Locate and test serial ports

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9B	Clear all Interrupts
9C	NPU test
9D	Clear all Interrupts
9E	Extended keyboard check
9F	Set numlock
A0	Keyboard reset
A1	Cache memory test
A2	Display any soft errors
A3	Set typematic rate
A4	Set memory wait states
A5	Clear screen
A6	Enable parity/NMI
A7	Clear all Interrupts
A8	Control to ROM at E0000
A9	Clear all Interrupts
AA	Display configuration
00	Call to Interrupt 19 boot loader

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AMI WIN BIOS

00	Control to Int 19 boot loader
01	Disable NMI
02	Power-on delay
03	Soft reset power-on
05	Disable cache
06	Uncompressed POST code
08	CMOS checksum
08	CMOS initialization
0A	CMOS initialization for date and time
0B	Initialization before keyboard batch
0C	Batch command to keyboard controller
0D	Verify batch command
0E	Initialize after KB controller batch
0F	Write KB command byte
10	Pin 23/24 block/unblock command
11	Check for <INS> key command
12	DMA/PIC disable
13	Chipset initialization
14	8254 timer test
19	Memory refresh test
20	Base 64K memory test
23	Set BIOS stack, setup before int. vector init
24	Interrupt vector initialization
25	Read input port of 9042 chip, clear password
26	Initialize global data for turbo switch
27	Initialize before setting video mode
28	Set video mode
2A	Initialize BUS
2B	Setup before operational video check
2C	Control to optional video ROM
2D	Proc. after optional video ROM routine
2E	Display memory Read/Write test if no EGA/VGA
2F	Display memory Read/Write test
30	Retrace check
31	Display alternate memory Read/Write check
32	Alternate display retrace check
34	Set display mode
37	Display power-on message
38	Initialize BUS types
39	Display BUS initialization error messages
3A	Display the hit <DEL> message
3B	Virtual modem memory test
40	Prepare descriptor tables
42	Enter virtual mode for memory test
43	Enable Interrupts for diagnostic mode
44	Initialize data to check memory wrap at 0:0
45	Check memory wrap, find total memory amount
46	Memory write test
47	640K base memory write test
48	Determine memory below 1MB
49	Determine memory above 1MB
4B	Check for soft reset, clear memory below 1MB
4C	Clear memory above 1MB
4D	Save memory size
4E	Display first 64K memory size
4F	Sequential and random memory test
50	Displayed memory size

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51	Above 1MB memory test
52	Save memory size information
53	Enter real mode
54	Disable gate A-20 line
57	Adjust memory size
58	Clear hit <DEL> message
59	DMA/PIC test
60	DMA #1 base register test
62	DMA #2 base register test
65	Program DMA unit 1 and 2
66	Initialize 8259 Interrupt controller
67	Keyboard test
7F	Enable extended NMI sources
80	Stuck key and batch test
81	Keyboard controller test
82	Write command byte, initialize circular buffer
83	Lock key check
84	Compare memory size with CMOS
85	Password/soft error check
86	Programming before check
87	Execute CMOS setup
88	Programming after setup
89	Power-on display
8B	Shadow main and video BIOS
8C	Setup options after CMOS setup
8D	Initialize mouse
8E	Reset hard disk controller
8F	Floppy setup
91	Hard disk setup
94	Base/extended memory size
95	Init. PCI/VLB BUS optional ROM's from C800
96	Initialize before C800 optional ROM control
97	Control to optional ROM
98	Processing after optional ROM control
99	Setup timer data area/printer base address
9A	Set RS-232 base address
9B	Initialize before NPU test
9C	NPU initialization
9D	Initialization after NPU test
9E	Check extended KB, KB ID and num-lock
9F	Issue keyboard ID command
A0	Reset keyboard ID flag
A1	Cache memory test
A2	Display and soft errors
A4	Program memory wait states
A5	Clear screen, enable parity NMI
A7	Init. needed before control to E000 ROM
A8	Control to E000 ROM
A9	Init. needed after control to E000 ROM
AA	Display system configuration
B0	Uncompressed SETUP code for hot-key
B1	Copy any code to specific area
C2	Disable NMI, power-on delay
C5	Enable ROM, disable cache
C6	ROM BIOS checksum
C7	CMOS shutdown register test
C8	CMOS shutdown
CA	Initialize CMOS date and time
CB	Initialization before keyboard batch

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CD	BAT command to keyboard controller
CE	Installation after keyboard controller batch
CF	Write keyboard command byte
D1	Check for <INS> key command
D2	Disable DMA and Interrupt controllers
D3	Chipset initialization/auto detect memory
D4	Uncompressed RUNTIME code
D5	RUNTIME code uncompressed
DD	Control to shadow RAM at F000:F000

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AMI EZ-FLEX BIOS

01	NMI disabled; Start CPU flag test
02	Power on delay
03	Initialize system chipset
04	Check keyboard for soft/hard reset
05	Enable ROM
06	ROM BIOS checksum tested
07	8042 keyboard controller tested
08	8042 keyboard controller tested
09	8042 keyboard controller tested
0A	8042 keyboard controller tested
0B	8042 protected mode tested
0C	8042 keyboard controller tested
0D	CMOS RAM shutdown register tested
0E	CMOS checksum tested
0F	CMOS initialization
10	CMOS/RTC status OK
11	Disable DMA and PIC
12	Video display disabled
13	Chipset and memory initialized
14	8254 PIT tested
15	PIT channel 2 tested
16	PIT channel 1 tested
17	PIT channel 0 tested
18	PIT memory refresh tested
19	PIT memory refresh tested
1A	Check 15 microsecond refresh (PIT)
1B	Base 64K memory tested
20	Address lines tested
21	Base 64K parity memory tested
22	Memory Read/Write tested
23	Perform setup's prior to initialization of the vector table
24	Initialize BIOS vector table in lower 1KB of system RAM
25	8042 keyboard controller tested
26	Global for keyboard controller tested
27	Perform setups for vector table initialization
28	Monochrome video mode tested
29	Video (CGA) color mode tested
2A	Parity enable tested
2B	Check for optional ROM's
2C	Check for video ROM
2D	Determine if EGA/VGA is installed
2E	Video memory is tested if non EGA/VGA
2F	Video memory tested
30	Video adapter tested
31	Alternate video memory tested
32	Alternate video adapter tested
33	Video mode tested
34	Video mode tested
35	BIOS ROM data area initialized
36	Power on display cursor set
37	Power on message displayed
38	Cursor position read
39	Display cursor reference
3A	Display Setup message
40	Protected mode tested
41	Build descriptor tables
42	CPU enters protected mode

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43	Protected mode interrupt enabled
44	Descriptor tables checked
45	Memory size checked
46	Memory read/Write tested
47	Base 640K memory tested
48	Memory below 1MB checked for
49	Memory above 1MB checked for
4A	ROM BIOS data area checked
4B	Memory below 1MB cleared for soft reset
4C	Memory above 1MB cleared for soft reset
4D	Update CMOS memory size
4E	Display base 64K memory test
4F	Memory test on base 640K performed
50	RAM size updated for shadow operation
51	Extended memory test performed
52	System is prepared for real mode
53	CPU is returned to real mode
54	CPU registers are returned to real mode
55	A20 gate disabled
56	BIOS data area rechecked
57	BIOS data area check complete
58	Setup message displayed
59	DMA register page tested
60	Display memory verified
61	DMA #1 tested
62	DMA #2 tested
63	Perform BIOS data area check
64	BIOS data area checked
65	DMA initialized
66	8259 PIC initialized
67	Keyboard tested
80	Keyboard reset
81	Check for stuck key and batch test
82	8042 keyboard controller tested
83	Lock key checked
84	Memory size compared to CMOS
85	Password and soft error checked
86	CMOS equipment checked performed
87	CMOS setup performed if selected
88	Main chipset reinitialized after CMOS setup
89	Power on message displayed
8A	Mouse check and wait message displayed
8B	Any ROM's attempted to be shadowed
8C	System initialized through CMOS settings
8D	Hard drives and floppy drives reset
8E	Floppy disk setup compared to CMOS settings
8F	Floppy controller initialized
90	Hard disks setup compared to CMOS settings
91	Hard disk controller initialized
92	BIOS data table checked
93	BIOS data table check complete
94	Memory size set
95	Display memory verified
96	All Interrupts cleared
97	Optional ROM's checked for
98	All Interrupts cleared
99	Timer data setup
9A	Serial ports checked for
9B	All Interrupts cleared

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9C	Math coprocessor checked
9D	All Interrupts cleared
9E	Extended keyboard checked
9F	NumLock set on keyboard
A0	Keyboard reset
A1	Cache memory size tested
A2	Display any soft errors
A3	Typematic rate set
A4	Memory wait states set
A5	Display is cleared
A6	Parity and NMI enabled
A7	All Interrupts cleared
A8	System control is turned over to ROM at E0000
A9	All Interrupts cleared
AA	Displayed configuration
00	Call to Interrupt 19 for boot loader

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AMI BIOS8 Modular BIOS

Before D1	Early chipset initialization is done. Early super I/O initialization is done including RTC and keyboard controller. NMI is disabled.
D1	Perform keyboard controller BAT test. Check if waking up from power management suspend state. Save power-on CPUID value in scratch CMOS.
D0	Go to flat mode with 4GB limit and GA20 enabled. Verify the bootblock checksum.
D2	Disable CACHE before memory detection. Execute full memory sizing module. Verify that flat mode is enabled.
D3	If memory sizing module not executed, start memory refresh and do memory sizing in Bootblock code. Do additional chipset initialization. Re-enable CACHE. Verify that flat mode is enabled.
D4	Test base 512KB memory. Adjust policies and cache first 8MB. Set stack.
D5	Bootblock code is copied from ROM to lower system memory and control is given to it. BIOS now executes out of RAM.
D6	Both key sequence and OEM specific method is checked to determine if BIOS recovery is forced. Main BIOS checksum is tested. If BIOS recovery is necessary, control flows to checkpoint E0.
D7	Restore CPUID value back into register. The Bootblock-Runtime interface module is moved to system memory and control is given to it. Determine whether to execute serial flash.
D8	The Runtime module is uncompressed into memory. CPUID information is stored in memory.
D9	Store the Uncompressed pointer for future use in PMM. Copying Main BIOS into memory. Leaves all RAM below 1MB Read-Write including E000 and F000 shadow areas but closing SMRAM.
DA	Restore CPUID value back into register. Give control to BIOS POST (ExecutePOSTKernel).
E1-E8 EC-EE	OEM memory detection/configuration error. This range is reserved for chipset vendors & system manufacturers. The error associated with this value may be different from one platform to the next.
E0	Initialize the floppy controller in the super I/O. Some interrupt vectors are initialized. DMA controller is initialized. 8259 interrupt controller is initialized. L1 cache is enabled.
E9	Set up floppy controller and data. Attempt to read from floppy.
EA	Enable ATAPI hardware. Attempt to read from ARMD and ATAPI CDROM.
EB	Disable ATAPI hardware. Jump back to checkpoint E9.
EF	Read error occurred on media. Jump back to checkpoint EB.
F0	Search for pre-defined recovery file name in root directory.
F1	Recovery file not found.
F2	Start reading FAT table and analyze FAT to find the clusters occupied by the recovery file.
F3	Start reading the recovery file cluster by cluster.
F5	Disable L1 cache.
FA	Check the validity of the recovery file configuration to the current configuration of the flash part.
FB	Make flash write enabled through chipset and OEM specific method. Detect proper flash part. Verify that the found flash part size equals the recovery file size.
F4	The recovery file size does not equal the found flash part size.
FC	Erase the flash part.
FD	Program the flash part.
FF	The flash has been updated successfully. Make flash write disabled. Disable ATAPI hardware. Restore CPUID value back into register. Give control to F000 ROM at F000:FFF0h.

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03	Disable NMI, Parity, video for EGA, and DMA controllers. Initialize BIOS, POST, Runtime data area. Also initialize BIOS modules on POST entry and GPNV area. Initialized CMOS as mentioned in the Kernel Variable "wCMOSFlags."
04	Check CMOS diagnostic byte to determine if battery power is OK and CMOS checksum is OK. Verify CMOS checksum manually by reading storage area. If the CMOS checksum is bad, update CMOS with power-on default values and clear passwords. Initialize status register A. Initializes data variables that are based on CMOS setup questions. Initializes both the 8259 compatible PICs in the system
05	Initializes the interrupt controlling hardware (generally PIC) and interrupt vector table.
06	Do R/W test to CH-2 count reg. Initialize CH-0 as system timer. Install the POSTINT1Ch handler. Enable IRQ-0 in PIC for system timer interrupt. Traps INT1Ch vector to "POSTINT1ChHandlerBlock."
08	Initializes the CPU. The BAT test is being done on KBC. Program the keyboard controller command byte is being done after Auto detection of KB/MS using AMI KB-5.
C0	Early CPU Init Start -- Disable Cache - Init Local APIC
C1	Set up boot strap processor Information
C2	Set up boot strap processor for POST
C5	Enumerate and set up application processors
C6	Re-enable cache for boot strap processor
C7	Early CPU Init Exit
0A	Initializes the 8042 compatible Key Board Controller.
0B	Detects the presence of PS/2 mouse.
0C	Detects the presence of Keyboard in KBC port.
0E	Testing and initialization of different Input Devices. Also, update the Kernel Variables. Traps the INT09h vector, so that the POST INT09h handler gets control for IRQ1. Uncompress all available language, BIOS logo, and Silent logo modules.
13	Early POST initialization of chipset registers.
24	Uncompress and initialize any platform specific BIOS modules.
30	Initialize System Management Interrupt.
2A	Initializes different devices through DIM. See *DIM Code Checkpoints* section of document for more information.
2C	Initializes different devices. Detects and initializes the video adapter installed in the system that have optional ROMs.
2E	Initializes all the output devices.
31	Allocate memory for ADM module and uncompress it. Give control to ADM module for initialization. Initialize language and font modules for ADM. Activate ADM module.
33	Initializes the silent boot module. Set the window for displaying text information.
37	Displaying sign-on message, CPU information, setup key message, and any OEM specific information.
38	Initializes different devices through DIM. See *DIM Code Checkpoints* section of document for more information.
39	Initializes DMAC-1 & DMAC-2.
3A	Initialize RTC date/time.
3B	Test for total memory installed in the system. Also, Check for DEL or ESC keys to limit memory test. Display total memory in the system.
3C	Mid POST initialization of chipset registers.
40	Detect different devices (Parallel ports, serial ports, and coprocessor in CPU, … etc.) successfully installed in the system and update the BDA, EBDA…etc.
50	Programming the memory hole or any kind of implementation that needs an adjustment in system RAM size if needed.

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52	Updates CMOS memory size from memory found in memory test. Allocates memory for Extended BIOS Data Area from base memory.
60	Initializes NUM-LOCK status and programs the KBD typematic rate.
75	Initialize Int-13 and prepare for IPL detection.
78	Initializes IPL devices controlled by BIOS and option ROMs.
7A	Initializes remaining option ROMs.
7C	Generate and write contents of ESCD in NVRam.
84	Log errors encountered during POST.
85	Display errors to the user and gets the user response for error.
87	Execute BIOS setup if needed / requested.
8C	Late POST initialization of chipset registers.
8D	Build ACPI tables (if ACPI is supported)
8E	Program the peripheral parameters. Enable/Disable NMI as selected
90	Late POST initialization of system management interrupt.
A0	Check boot password if installed.
A1	Clean-up work needed before booting to OS.
A2	Takes care of runtime image preparation for different BIOS modules. Fill the free area in F000h segment with 0FFh. Initializes the Microsoft IRQ Routing Table. Prepares the runtime language module. Disables the system configuration display if needed.
A4	Initialize runtime language module.
A7	Displays the system configuration screen if enabled. Initialize the CPU's before boot, which includes the programming of the MTRR's.
A8	Prepare CPU for OS boot including final MTRR values.
A9	Wait for user input at config display if needed.
AA	Uninstall POST INT1Ch vector and INT09h vector. Deinitializes the ADM module.
AB	Prepare BBS for Int 19 boot.
AC	End of POST initialization of chipset registers.
B1	Save system context for ACPI.
00	Passes control to OS Loader (typically INT19h).
61-70	OEM POST Error. This range is reserved for chipset vendors & system manufacturers. The error associated with this value may be different from one platform to the next.
2A	Initialize different buses and perform the following functions: Reset, Detect, and Disable (function 0); Static Device Initialization (function 1); Boot Output Device Initialization (function 2). Function 0 disables all device nodes, PCI devices, and PnP ISA cards. It also assigns PCI bus numbers. Function 1 initializes all static devices that include manual configured onboard peripherals, memory and I/O decode windows in PCI-PCI bridges, and noncompliant PCI devices. Static resources are also reserved. Function 2 searches for and initializes any PnP, PCI, or AGP video devices.
38	Initialize different buses and perform the following functions: Boot Input Device Initialization (function 3); IPL Device Initialization (function 4); General Device Initialization (function 5). Function 3 searches for and configures PCI input devices and detects if system has standard keyboard controller. Function 4 searches for and configures all PnP and PCI boot devices. Function 5 configures all onboard peripherals that are set to an automatic configuration and configures all remaining PnP and PCI devices.
AC	First ASL check point. Indicates the system is running in ACPI mode.
AA	System is running in APIC mode.
01,02, 03,04, 05	Entering sleep state S1, S2, S3, S4, or S5.
10,20, 30,40 40,50	Waking from sleep state S1, S2, S3, S4, or S5.

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Arche Legacy BIOS

01	Disable the NMI and test CPU registers
02	Verify the BIOS ROM checksum (32KB at F8000h)
03	Initialize the keyboard controller and CMOS RAM communication
04	Disable the DMA and PIT; test the CMOS RAM interrupt
05	Reset the video controller
06	Test the 8254 programmable interrupt timer
07	Test delta count timer channel 2 (speaker)
08	Test delta count timer channel 1 (memory refresh)
09	Test delta count timer channel 0 (system timer)
0A	Test parity circuit and turn on refresh
0B	Enable parity check and test system timer
0C	Test refresh trace link toggle
0D	Test refresh timing synchronization
10	Disable cache and shadow memory; test the 64KB base memory
11	Perform 64KB memory read/write test
12	Initialize interrupt vector table in lower 1KB of RAM
14	Test CMOS RAM shutdown register...disable DMA and interrupt controllers
15	Test CMOS RAM battery and checksum
16	Test for floppy drive, based on CMOS setup...initialize monochrome video
17	Initialize CGA video
18	Clear the parity status (if any)
19	Test for EGA/VGA video BIOS at C0000h and pass control
1A	Return from video ROM
1B	Test primary video adapter...test video memory
1C	Test secondary video adapter...test video memory
1D	Compare CMOS settings to video adapter
1E	Set video mode according to CMOS settings
20	Display CMOS RAM read/write errors and halt
21	Set cursor and call interrupt 10 to display status message
22	Display power on message; "386 BIOS"; check if CPU speed is 25Mhz or 33Mhz
23	Read new cursor position
24	Display AMI copyright message at the bottom of the screen
25	Test shadow RAM
F0	Shadow RAM test failed
30	Ready to enter protected mode
31	Enter protected mode (A20 gate) and enable timer interrupt (IRQ 0)
32	Get memory size above 1MB
33	Get memory size below 640KB
34	Test memory above 1MB
35	Test memory below 1MB
37	Clear memory below 1MB
38	Clear memory above 1MB
39	Use CMOS shutdown byte and return to real mode
3A	Test 64KB read/write
3B	Test RAM below 1MB and show the area being tested
3C	Test RAM above 1MB and show the area being tested
3D	RAM test complete OK
3E	Ready to return to real mode
3F	Back in real mode
40	Disable A20 gate
41	Check for AMI copyright message in ROM
42	Display the AMI copyright message, if found
43	Test cache memory; Clear <Esc> message
4E	Process shutdown 1; Return to real mode
4F	Restore interrupt vectors and data in BIOS RAM area
50	Test DMA controller
51	Initialize DMA controller

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52	Test the DMA controller with patterns
54	Test DMA controller latches
55	Initialize and enable DMA controllers 1 and 2
56	Initialize 8259 programmable interrupt controllers
57	Test 8259 programmable interrupt controllers and setup interrupt mask registers
61	Check DDNIL status bit and display message
70	Perform keyboard (BAT) basic assurance test
71	Program keyboard to AT type
72	Disable keyboard and initialize keyboard circular buffer
73	Display message and initialize floppy controller and drive
74	Attempt to access the floppy drive
75	If the CMOS RAM is good, check and initialize the hard disk controller and drive
76	Attempt to access the hard disk drive
77	Shuffle and internal error codes
79	Check CMOS RAM battery and checksum...clear parity status
7A	Compare size of base/extended memory to CMOS information
7B	Unknown AMI function
7C	Display AMI copyright
7D	Set AT memory expansion bit
7E	Verify the ROM contains and AMI copyright
7F	Clear the <Del> message from the display...check if <Del> was pressed
80	Locate option ROM at C800h to DE00h and pass control to any found
81	Return from option ROM and initialize timer and data area
82	Setup parallel and serial ports
83	Test for math coprocessor
84	Check if keyboard is locked
85	Display any soft error messages
86	Test for option ROM at E0000h
A0	Error found in 256KB or 1MB RAM IC in lower 640KB
A1	Base 64KB random access and data pattern test (only in 386APR and Presto 386SX BIOS)
A9	Initialize on board VGA controller (Presto 386SX BIOS)
B0	Error in 256KB RAM IC in 640KB
B1	Base 64KB random access and data pattern test (only in Presto 386SX BIOS)
E0	Return to real mode and initialize base 64KB RAM (Presto)
E1	Initialize 640KB RAM (Presto)
EF	Configuration memory error - can't find memory
F0	Test shadow RAM from 04000h
00	Call the interrupt 19 boot loader

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AST BIOS

00	Reserved; Beep and halt if error occurs
01	Test CPU registers
02	Test the 8042 keyboard controller buffer
03	Test the 8042 keyboard controller reset
04	Verify presence of keyboard and check communication
05	Read keyboard input port (WS386SX16)
06	Initialize system board support chipset
09	Test BIOS ROM checksum
0D	Test 8254 programmable interrupt timer registers (13 short beeps)
0E	Test ASIC registers (CLEM only, 14 short beeps)
0F	Test CMOS RAM shutdown byte (15 short beeps)
10	Test DMA controller 0 registers
11	Test DMA controller 1 registers
12	Test DMA page registers (EGA.VGA vertical retrace failed)
13	EGA/VGA RAM test failed
14	Test memory refresh toggle (EGA/VGA CRT registers failed)
15	Test base 64KB memory
16	Set interrupt vectors in base memory
17	Initialize video
18	Test display memory
20	EISA bus board power on (EISA systems only)
30	Test programmable interrupt controller #1 mask register
31	Test programmable interrupt controller #2 mask register
32	Test programmable interrupt controller's for stuck interrupts
33	Test for stuck NMI (P386 25.33, P486, CLAM and EISA)
34	Test for stuck DDNIL status (CLEM only)
40	Test CMOS RAM backup battery
41	Calculate and verify CMOS checksum
42	Setup CMOS RAM options (except WS386SX16)
50	Test the protected mode
51	Test protected mode exceptions
60	Calculate RAM size
61	Test RAM
62	Test shadow RAM (WS386SX16, P386 25/33, P486, CLEM, EISA); test cache (P386/16)
63	Test cache memory (P386 25/33, P486, CLEM, EISA); copy video BIOS to shadow RAM (p386C, P386/16, WS386SX16)
64	Copy system BIOS to shadow RAM (P386 25/33, P486, CLEM,EISA); Copy video BIOS to shadow RAM (P386 16, WS386SX16)
65	Copy video BIOS to shadow RAM P386 25/33, P486, CLEM,EISA); Test cache (WS386SX16)
66	Test 8254 programmable interrupt timer channel 2 (P386 25/33, P486, EISA)
67	Initialize memory (Eagle only)

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AT&T BIOS

01	CPU test
02	System I/O port test
03	ROM checksum test
05	DMA page register test
06	Timer 1 test
07	Timer 2 test
08	RAM refresh test
09	8/19 bit bus conversion check
0A	Interrupt controller 1 test
0B	Interrupt controller 2 test
0C	Keyboard controller test
0D	CMOS RAM/RTC test
0E	Battery power test
0F	CMOS RAM checksum test
10	CPU protected mode
11	Display configuration test
12	Display controller test
13	Primary display error
14	Extended CMOS test
15	AT bus reset
16	Initialize chipset registers
17	Check for extension ROM's
18	Internal memory address test
19	Remap memory
1A	Memory interleave mode test
1B	Remap shadow memory
1C	Setup MRAM
1D	Expanded memory test
1E	AT memory error
1F	Internal memory error
20	Minimum POST tests complete
21	DMA controller 1 test
22	DMA controller 2 test
23	Timer 0 test
24	Initialize internal controllers
25	Unexpected interrupt
26	Expected interrupt
30	Switch to protected mode
31	Size AT bus memory or size external memory
32	Address lines A16 to A23 test
33	Internal memory test or conventional memory test
34	AT bus memory test or external memory test
38	Shadow ROM BIOS to RAM
39	Shadow extension BIOS to RAM
40	Enable/disable keyboard
41	Keyboard clock and data test
42	Keyboard reset
43	Keyboard controller test
44	A20 gate test
50	Initialize interrupt table
51	Enable timer interrupt
60	Floppy controller/drive test
61	Hard disk controller test
62	Initialize floppy drives
63	Initialize hard drives
70	Real time clock test
71	Set real time clock

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72	Test parallel interfaces
73	Test serial interfaces
74	Check external ROM's
75	Numeric coprocessor test
76	Enable keyboard and RTC interrupts (IRQ 9)
F0	Display system startup message
F1	Check for ROM at E000h
F2	Boot from floppy or hard disk
F3	Run setup program
F4	Run password program
FC	DRAM type detection
FD	CPU register test

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AT&T BIOS v3.0

01	CPU test 1: verify CPU status bits
02	Powerup check - Initialize motherboard and chipset with default values; Check 8042 keyboard controller buffer
03	Clear 8042 keyboard controller - send command AA, fail if status is not 2 output buffer full
04	Reset 8042 keyboard controller
05	Get8042 keyboard controller manufacturing status
06	Initialize motherboard chipset; disable color/mono video; disable 8237 DMA controller; reset 80x87 coprocessor; initialize 8255 timer 1; clear DMA/page registers/CMOS RAM shutdown byte
07	CPU test 2; read/write/verify CPU registers SS, SP, BP, with FF and 00
08	Initialize CMOS RAM/RTC
09	Checksum 32K of BIOS ROM
0A	Initialize video interface; initialize 6845 controller
0B	Test 8254 programmable interrupt timer channel 0
0C	Test 8254 programmable interrupt timer channel 1
0D	Test 8254 programmable interrupt timer channel 2
0E	Test CMOS RAM shutdown byte
0F	Test extended CMOS RAM, if present
10	Test 8237 DMA controller channel 0
11	Test 8237 DMA controller channel 1
12	Test 8237 DMA controller page registers
13	Test 8741 keyboard controller interface
14	Test memory refresh toggle
15	Test first 64K of base memory
16	Set up interrupt tables in low memory
17	Set up video I/O operations
18	(1 beep) Test MDA/CGA video memory unless EGA/VGA adapter is found
19	Test 8259 programmable interrupt timer channel 1
1A	Test 8259 programmable interrupt timer channel 0
1B	Test CMOS RAM battery level
1C	Test CMOS RAM checksum
1D	Set system memory size parameters
1E	Size base memory 64K at a time
1F	Test base memory found from 64K to 640K
20	Test stuck bit in 8259 programmable interrupt controller
21	Test for stuck NMI bits
22	Test 8259 programmable interrupt controller functionality
23	Test protected mode
24	Size extended memory above 1MB
25	Test all base and extended memory found, except the first 64K
26	Test protected mode exceptions
27	Initialize shadow RAM and move system BIOS and/or video BIOS into it if enabled by CMOS RAM setup
28	Detect and initialize Intel 8242/8248 chip
29	Reserved
2A	Detect and initialize keyboard
2B	Detect and initialize floppy drive
2C	Detect and initialize serial ports
2D	Detect and initialize parallel ports
2E	Detect and initialize hard drive
2F	Detect and initialize coprocessor
30	Reserved
31	Detect and initialize adapter ROM's
BD	Initialize Orvonton cache controller, if present
CA	Initialize 386 Micronics cache, if present
CC	Shutdown NMI handler

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EE	Test for unexpected processor exception
FF	Interrupt 19 boot loader

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AT&T BIOS v3.00 - 286 N3.03 Ergänzung

01	Processor test #1
02	Determine type of POST test
03	Clear 8042 keyboard controller interface
04	Reset 8042 keyboard controller interface
05	Get 8042 keyboard controller manufacturing status
06	Initialize LSI onboard chips
07	Processor test #2
08	Initialize CMOS chip
09	EPROM checksum for 32KB
0A	Initialize video interface
0B	Test 8254 programmable interrupt timer channel 0
0C	Test 8254 programmable interrupt timer channel 1
0D	Test 8254 programmable interrupt timer channel 2
0E	Test CMOS date and timer
0F	Test CMOS shutdown byte
10	Test DMA channel 0
11	Test DMA channel 1
12	Test DMA page registers
13	Test 8741 keyboard controller
14	Test memory refresh toggle circuits
15	Test 1st 64KB of system memory
16	Setup interrupt vector table
17	Setup video I/O operations
18	Test video memory
19	Test 8259 programmable interrupt controller channel 1 mask bits
1A	Test 8259 programmable interrupt controller channel 2 mask bits
1B	Test CMOS battery level
1C	Test CMOS checksum
1D	Setup configuration byte for CMOS
1E	Sizing system memory & compare with CMOS
1F	Test found system memory
20	Test stuck 8259's interrupt bits
21	Test stuck NMI bits
22	Test 8259 programmable interrupt controller functionality
23	Test protected mode and A20 gate
24	Sizing extended memory above 1MB
25	Test found system/extended memory
26	Test exceptions in protected mode
27	Reserved
2A	POST_KEYBOARD
2B	POST_FLOPPY
2C	POST_COMM
2D	POST_PRN
2E	POST_DISK
2F	POST_MATH
30	POST_EXCEPTION
CC	POST_NMI

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AT&T BIOS 386 BIOS 3.1

01	Processor test 1
02	Determine POST type
03	Clear 8042 keyboard controller interface
04	Reset 8042 keyboard controller interface
05	Get 8042 keyboard controller manufacturing status
06	Initialize onboard LSI chips
07	Processor test 2
08	Initialize CMOS timer/real time clock
09	EPROM checksum
0A	Initialize video interface
0B	Test 8254 programmable interrupt timer channel 0
0C	Test 8254 programmable interrupt timer channel 1
0D	Test 8254 programmable interrupt timer channel 2
0E	Test CMOS shutdown byte
0F	Test extended CMOS
10	Test DMA channel 0
11	Test DMA channel 1
12	Test DMA page registers
13	Test keyboard controller interface
14	Test memory refresh toggle circuits
15	Test first 64KB of system memory which is used by system BIOS
16	Setup interrupt vector table
17	Video I/O operations
18	Video memory test for CGA and mono cards
19	Test 8259 mask bits on channel 1
1A	Test 8259 mask bits on channel 2
1B	Check CMOS battery level
1C	Test the CMOS checksum data at 2E and 2Fh
1D	Configuration of CMOS if checksum good
1E	System memory size determined
1F	Tests memory from the top of 64K to the top of memory
20	Check for stuck 8259 interrupt bits
21	Check for stuck NMI interrupt bits
22	Check for 8259 functionality
23	Verifies protected mode
24	System memory size is determined for extended memory
25	Tests extended memory found above using virtual 8086 paging mode and writing an FFFF/AA55/0000 pattern
26	Protected mode exceptions
27	Test cache controller(386/486) or shadow RAM
28	Set up cache controller or 8042 keyboard controller
29	Reserved
2A	Initialize keyboard and controller
2B	Initialize floppy drive and controller
2C	Detect and initialize serial ports
2D	Detect and initialize parallel ports
2E	Initialize hard drive and controller
2F	Detect and initialize coprocessor
30	Reserved
31	Detect and initialize option ROM's
3B	Initialize secondary cache with Opti chipset (486 only)
CC	NMI handler shutdown
EE	Unexpected processor exception
FF	Interrupt 19 boot loader

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AT&T BIOS ISA/EISA BIOS v4.0

01	Processor test 1
02	Processor test 2
03	Calculate BIOS EPROM
04	Test CMOS RAM interface
05	Initialize chipset
06	Test memory refresh
07	Setup low memory
08	Setup interrupt vector table
09	Test CMOS RAM checksum and load default
0A	Initialize keyboard
0B	Initialize video interface
0C	Test video memory
0D	OEM specific; initialization of motherboard chips required by OEM
0E	Reserved
0F	Test DMA controller 0
10	Test DMA controller 1
11	DMA page registers
12	Reserved
13	Reserved
14	Test 8254 timer 0 counter 2
15	Verify 8259 programmable interrupt controller channel 1
16	Verify 8259 programmable interrupt controller channel 2
17	Test for stuck 8259 interrupt bits
18	Test 8259 functionality
19	Test for NMI bits
1A	Reserved
1B	Reserved
1C	Reserved
1D	Reserved
1E	Reserved
1F	Set EISA mode
20	Initialize and enable EISA slot 0
21	Initialize and enable EISA slot 1
22	Initialize and enable EISA slot 2
23	Initialize and enable EISA slot 3
24	Initialize and enable EISA slot 4
25	Initialize and enable EISA slot 5
26	Initialize and enable EISA slot 6
27	Initialize and enable EISA slot 7
28	Initialize and enable EISA slot 8
29	Initialize and enable EISA slot 9
2A	Initialize and enable EISA slot 10
2B	Initialize and enable EISA slot 11
2C	Initialize and enable EISA slot 12
2D	Initialize and enable EISA slot 13
2E	Initialize and enable EISA slot 14
2F	Initialize and enable EISA slot 15
30	Size base memory from 256K to 640K and test
31	Test extended memory
32	If EISA mode flag set, test EISA memory found during slot initialization
33	Reserved
34	Reserved
35	Reserved
36	Reserved
37	Reserved
38	Reserved
39	Reserved

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3A	Reserved
3B	Reserved
3C	Verify CPU can switch in and out of protected, virtual 86 and 8086 page modes
3D	Check for mouse and initialize if present
3E	Initialize cache controller
3F	Enable shadow RAM
40	Reserved
41	Initialize floppy drive controller and drives
42	Initialize hard drive controller and hard drives
43	Serial ports detected and initialized
44	Parallel ports detected and initialized
45	Coprocessor detected and initialized
46	Setup message print to screen
47	Boot speed set
48	Reserved
49	Reserved
4A	Reserved
4B	Reserved
4C	reserved
4D	Reserved
4E	If manufacturing POST loop pin set, reboot, otherwise non-fatal error messages will be displayed
4F	Security check
50	Write all CMOS values back to CMOS RAM
51	Preboot enabled
52	Initialize ROM's between C80000-EFFFF
53	Initialize time value at address 40 of BIOS
55	Initialize DDNIL counter to NULL's
63	Boot attempt
B0	Spurious interrupt occurred in protected mode
B1	Unclaimed NMI
BF	Program chipset
C0	OEM specific
C1	OEM specific
C2	OEM specific
C3	OEM specific
C4	OEM specific
C5	OEM specific
C6	OEM specific
C7	OEM specific
C8	OEM specific
C9	OEM specific
D0	Debug
D1	Debug
D2	Debug
D3	Debug
D4	Debug
D5	Debug
D6	Debug
D7	Debug
D8	Debug
D9	Debug
DA	Debug
DB	Debug
DC	Debug
DD	Debug
DE	Debug
DF	Debug
E0	Reserved

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E1	Setup page 1
E2	Setup page 2
E3	Setup page 3
E4	Setup page 4
E5	Setup page 5
E6	Setup page 6
E7	Setup page 7
E8	Setup page 8
E9	Setup page 9
EA	Setup page 10
EB	Setup page 11
EC	Setup page 12
ED	Setup page 13
EE	Setup page 14
EF	Setup page 15
FF	Boot via interrupt 19 if no errors detected

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AT&T BIOS EISA BIOS

01	CPU flags
02	CPU registers
03	Initialize DMA
04	Memory refresh
05	Keyboard initialization
06	ROM checksum
07	CMOS
08	256K memory
09	Cache
0A	Set interrupt table
0B	CMOS checksum
0C	Keyboard initialization
0D	Video adapter
0E	Video memory
0F	DMA channel 0
10	DMA channel 1
11	DMA page register
14	Timer chip
15	Programmable interrupt controller 1
16	Programmable interrupt controller 2
17	programmable interrupt controller stuck bits
18	Programmable interrupt controller maskable IRQ's
19	NMI bit check
1F	CMOS RAM
20	Slot 0
21	Slot 1
22	Slot 2
23	Slot 3
24	Slot 4
25	Slot 5
26	Slot 6
27	Slot 7
28	Slot 8
29	Slot 9
2A	Slot 10
2B	Slot 11
2C	Slot 12
2D	Slot 13
2E	Slot 14
2F	Slot 15
30	Memory size 256K
31	Memory test over 256K
32	EISA memory
3C	CMOS setup on
3D	Mouse
3E	Cache RAM
3F	Shadow RAM
40	N/A
41	Floppy drive
42	Hard drive
43	Serial and parallel ports
45	coprocessor
47	Speed
4E	manufacturing loop
4F	Security
50	CMOS update
51	Enable NMI

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52	Adapter ROM's
53	Set time
63	Boot
B0	NMI in protected Disable
B1	NMI
BF	Chipset program
C0	Cache on/off
C1	Memory size
C2	Base 256K test
C3	DRAM page select Video
C4	switch
C5	Shadow RAM
C6	Cache program
C8	Speed switch
C9	Shadow RAM
CA	OEM chipset
FF	Boot

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AT&T BIOS (Award BIOS v4.5x-non PnP)

C0	Turnoff chipset cache
01	Processor test 1
02	Processor test 2
03	Initialize chipset; Disable NMI/PIE/UEL/SQWV, video, parity checking, DMA; Reset coprocessor; Clear all page registers and CMOS shutdown byte; Initialize timer 0, 1 and 2 including EISA timer to known state; Initialize DMA controllers 0 and 1; Initialize interrupt controllers 0 and 1 and EISA extended controllers
04	Test memory refresh
05	Blank video
06	Reserved
07	Test CMOS and battery status
C1	Memory presence test
C5	Early shutdown
C6	Cache presence test
08	Setup low memory
09	Early cache initialization
0A	Setup interrupt vector table; Initialize first 120 interrupt vectors with SPURIOUS_INT_HDLR and initialize interrupts 00-FF according to INT_TBL
0B	Test CMOS RAM checksum
0C	Initialize keyboard
0D	Initialize video interface
0E	Test video memory
0F	Test DMA controller 0
10	Test DMA controller 1
11	Test DMA page registers
12	Reserved
13	Reserved
14	Test 8254 timer 0 counter 2
15	Test 8259 1 mask bits
16	Test 8259 2 mask bits
17	Test for 8259 stuck interrupt bits
18	Test 8259 interrupt functionality
19	Test for stuck NMI bits
1A	Display CPU clock
1B	Reserved
1C	Reserved
1D	Reserved
1E	Reserved
1F	Set EISA mode
20	Enable slot 0
21	Enable slot 1
22	Enable slot 2
23	Enable slot 3
24	Enable slot 4
25	Enable slot 5
26	Enable slot 6
27	Enable slot 7
28	Enable slot 8
29	Enable slot 9
2A	Enable slot 10
2B	Enable slot 11
2C	Enable slot 12
2D	Enable slot 13
2E	Enable slot 14
2F	Enable slot 15
30	Size base and extended memory
31	Test base and extended memory

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32	Test EISA extended memory
33	Reserved
34	Reserved
35	Reserved
36	Reserved
37	Reserved
38	Reserved
39	Reserved
3A	Reserved
3B	Reserved
3C	Setup enabled
3D	Check for and initialize mouse if present
3E	Setup cache controller
3F	Reserved
BF	Chipset initialization
40	Display virus protect enable or disable
41	Initialize floppy controller and drive's
42	Initialize hard drive controller and drive's
43	Serial and parallel ports detected and initialized
44	Reserved
45	Coprocessor detected and initialized if present
46	Reserved
47	Reserved
48	Reserved
49	Reserved
4A	Reserved
4B	Reserved
4C	Reserved
4D	Reserved
4E	Manufacturing POST loop/display messages
4F	Security check
50	Write CMOS
51	Preboot enable
52	Initialize options ROM's between C800 and EFFF
53	Initialize time value in 40h BIOS area
60	Setup virus protect
61	Set boot speed
62	Setup numlock
63	Boot attempt
B0	Spurious if interrupt occurs in protected mode
B1	Unclaimed NMI
E1	Setup page 1
E2	Setup page 2
E3	Setup page 3
E4	Setup page 4
E5	Setup page 4
E6	Setup page 5
E7	Setup page 6
E8	Setup page 7
E9	Setup page 8
EA	Setup page 9
EB	Setup page 10
EC	Setup page 11
ED	Setup page 12
EE	Setup page 13
EF	Setup page 14
FF	Boot from interrupt 19

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AT&T BIOS (Award BIOS v4-5x PnP)

C0	Turn off OEM specific cache; Initialize standard devices: DMA controller (8237), Programmable interrupt controller (8259), Programmable interval timer (8254), RTC chip
C1	Auto detection on onboard DRAM & cache
C3	Test first 256K DRAM
C5	Copy the BIOS from ROM into E000FFFF shadow RAM
01	Reserved
02	Reserved
03	Initialize EISA registers
04	Reserved
05	Keyboard controller setup; enable keyboard interface
06	Reserved
07	Verifies CMOS basic read/write functionality
BE	Program default values into chipset according to the MODBINable Chipset Default Table
09	Program configuration register for Cyrix CPU according to MODBINable Cyrix Register Table; OEM specific cache initialization
0A	Initialize first 32 interrupt vectors; Issue CPUID instruction to identify CPU type
0B	Verify RTC; Detect bad battery; Read CMOS data into BIOS stack area; PnP initializations (PnP BIOS only): Assign CSN to PnP ISA card, create resource map from ESCD; Assign I/O and memory for PCI devices (PCI BIOS only)
0C	Initialize BIOS data area
0D	Program chipsets value; Measure CPU speed for display; Video initialization (If no display, speaker beeps)
0E	Initialize APIC (multiprocessor BIOS only); Test video RAM; Show display message
0F	DMA channel 0 test
10	DMA channel 1 test
11	DMA page registers test
12	Reserved
13	Reserved
14	Test 8254 timer 0 counter 2
15	Test 8259 interrupt mask bits for channel 1
16	Test 8259 interrupt mask bits for channel 2
17	Reserved
19	Test 8259 functionality
1A	Reserved
1B	Reserved
1C	Reserved
1D	Reserved
1E	Execute EISA initialization if NVM is good
1F	Reserved
20	Reserved
21	Reserved
22	Reserved
23	Reserved
24	Reserved
25	Reserved
26	Reserved
27	Reserved
28	Reserved
29	Reserved
30	Size base and extended memory
31	Test base memory from 256K to 640K; Test extended memory from 1MB to the top of memory
32	Display Award Plug & Play BIOS Extension message; Program super I/O chipset
33	Reserved

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34	Reserved
35	Reserved
36	Reserved
37	Reserved
38	Reserved
39	Reserved
3A	Reserved
3B	Reserved
3C	Set flag to allow access to CMOS setup
3D	Initialize keyboard; Initialize PS/2 mouse
3E	Initialize L2 cache
3F	Reserved
40	Reserved
BF	Program chipset values according to setup
41	Initialize floppy controller and floppy drives
42	Initialize hard drive controller and hard drives
43	initialize serial and parallel ports in PnP BIOS
44	Reserved
45	Initialize coprocessor
46	Reserved
47	Reserved
48	Reserved
49	Reserved
4A	Reserved
4B	Reserved
4C	Reserved
4D	Reserved
4E	Error messages displayed if detected (F1 displayed to continue)
4F	Ask for password if needed; Energy star logo displayed if Green BIOS
50	Write all CMOS values currently in the BIOS stack back to the CMOS
51	Reserved
52	Initialize ISA ROM's; Assign IRQ's to any PCI devices, initialize PCI ROM's; PnP initializations; Shadow RAM setup; Parity setup; Power management initialized
53	Serial and parallel ports initialized for non-PnP BIOS
54	Reserved
55	Reserved
56	Reserved
57	Reserved
58	Reserved
59	Reserved
5A	Reserved
5B	Reserved
5C	Reserved
5D	Reserved
5E	Reserved
5F	Reserved
50	Virus protection setup for boot sector if enabled
61	L2 cache enabled; Boot up speed according to setup; Chipset initialization finalized; Power Management finalized; Show system configuration table
62	Setup time/date according to setup values; Program the numlock, typematic rates, and typematic speeds according to setup
63	ESCD updated if changed to BIOS made; Clear memory that may be used; Bot from interrupt 19
FF	Boot

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AWARD BIOS (Original XT)

03	Flag resister test
06	CPU register test
09	System hardware initialization
0C	BIOS checksum
0F	DMA page register initialization
12	Test DMA address and count registers
15	DMA initialization
18	Timer test
1B	Timer initialization
1E	Start RAM initialization
21	Test base 64K of RAM
24	Setup init. and temp stack
27	Initialize PIC
2A	Interrupt mask register test
2D	Hot interrupt test
30	V40 DMA if present
33	Verify system clock initialization
36	Keyboard test
39	Setup interrupt table
3C	Read system configuration switches
3F	Video test
42	Serial port determination
45	Parallel port determination
48	Game port determination
4B	Copyright message display
4E	Calculation of CPU speed
54	Test of system memory
55	Floppy drive test
57	System initialized before boot
5A	Call to Int 19

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AWARD XT v3.1 BIOS

01	Processor test fail; Processor status verification #1
02	Type of POST/keyboard buffer; Failed if the keyboard interface buffer is filled with data
06	Initialize 6845 video controller, 8237 DMA controller, 8259 PIC, 8253 timer channel channel 1 initialized; Reset math coprocessor; Disable color and mono video, parity circuits and DMA chips; Clear DMA chips and page registers
07	Process registers except SS, SP, BP with data patterns 00 and FF; Processor status verification #2
09	ROM checksum for 32K tested
0A	Initialize the 6845 video controller
15	Test first 64K of system memory
16	Set up interrupt table in first 64K
17	Set up video I/O operations
18	Test video memory
19	8259 mask bits-channel 1
1A	8259 mask bits-channel 2
1D	Setup configuration byte from CMOS
1E	Size memory and compare with CMOS
1F	Test base memory; Test found system memory
20	Test stuck 8259's Interrupt bits
21	Test stuck NMI parity I/O bits
22	8259 Interrupt functionality tested
2A	Keyboard initialized
2B	Floppy dive controller and drive initialized
2C	Initialize COM ports
2D	Initialize LPT ports
2F	Initialize math coprocessor
31	Initialize option ROM's
FF	Int. 19 boot attempt

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AWARD v3.3 BIOS

01-05	Keyboard controller 8042 tested
06	On-board LSI initialized
07	CPU flags tested
08	Calculate CMOS checksum
09	Initialize the 8254 PIT
0A	8254 PIC tested
0B	DMA controller tested
0C	8259 PIC initialized
0D	8259 PIC tested
0E	ROM BIOS checksum tested
0F	Extended CMOS tested
10	8259 PIC tested
11	8259 PIC tested
12	8259 PIC tested
13	8259 PIC tested
14	8259 PIC tested
15	First 64K RAM tested
16	Interrupt vector tables initialized
17	Video initialization
18	Video memory tested
19	Interrupt line mask 8259 PIC tested
1A	Interrupt line mask 8259 PIC tested
1B	Battery good
1C	CMOS checksum verified
1D	CMOS chip/RTC verified
1E	Memory size checked
1F	Memory verified
20	DMA initialized
21	PIC initialized
22	PIT initialized
24	Extended memory size checked
25	Extended memory tested
26	Protected mode entered
27	Shadow RAM, cache controller initialized
28	Shadow RAM, cache controller tested
29	Reserved
2A	Initialize keyboard
2B	Floppy drive initialization
2C	Serial port initialization
2D	Parallel port initialization
2E	Hard disk initialization
2F	Math coprocessor
30	Reserved
31	Optional ROM's checked for
FF	Boot from Int 19

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AWARD EISA BIOS

01	CPU flags
02	CPU registers
03	Initialize DMA, PIC, PIT
04	Memory refresh
05	Keyboard initialization
06	ROM checksum
07	CMOS, battery
08	256K memory
09	Cache
0A	Set Interrupt table
0B	CMOS checksum
0C	Keyboard initialization
0D	Video adapter
0E	Video memory
0F	DMA channel 0
10	DMA channel 1
11	DMA page register
14	Timer chip
15	PIC controller 1
16	PIC controller 0
17	PIC stuck bits
18	PIC maskable IRQ's
19	NMI bit check
1F	CMOS XRAM
20	Slot 0
21	Slot 1
22	Slot 2
23	Slot 3
24	Slot 4
25	Slot 5
26	Slot 6
27	Slot 7
28	Slot 8
29	Slot 9
2A	Slot 10
2B	Slot 11
2C	Slot 12
2D	Slot 13
2E	Slot 14
2F	Slot 15
30	Memory size 256K
31	Memory test over 256K
32	EISA memory
3C	CMOS setup
3D	Mouse/adapter, CMOS
3E	Cache RAM
3F	Shadow RAM
41	Floppy drive
42	Hard drive
43	RS232 parallel
45	NPU
47	Speed
4E	Manufacturing loop
4F	Security
50	CMOS update
51	Enable NMI, cache
52	Adapter ROM's

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53	Set time
60	Virus protection setup
61	Boot speed
62	Numlock setup
63	Boot
B0	NMI in protected
B1	Disable NMI
BE	Chipset default initialization
BF	Chipset program
C0	Cache on/off
C1	Memory size
C2	Base 256K test
C3	DRAM page select
C4	Video switch
C5	Shadow RAM
C6	Cache program
C8	Speed switch
C9	Shadow RAM
CA	OEM chipset
FF	Boot

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AWARD ISA/EISA BIOS v4.0

01	CPU flags tested; Processor test #1
02	CPU registers tested; Processor test #2; Verify all CPU registers except SS, SP, BP with data patterns 00 and FF
03	Initialize DMA, PIC, PIT; Calculate BIOS EPROM and sign on message checksum (fail if not 0)
04	Memory refresh initialized; Test CMOS RAM interface
05	Keyboard initialization; Initialize NMI, PIE, AIE, UEI, SQWV; Disable video, parity checking and DMA; Math coprocessor reset; Clear all page registers and CMOS RAM shutdown byte; Initialize timers 0, 1, 2 and set EISA timer to a known state; Initialize DMA controllers 0 and 1; Initialize interrupt controllers 0 and 1; Initialize EISA extended registers
06	ROM checksum; Memory refresh tested
07	Low memory setup; Initialize chipset and test the presence of memory; OEM chipset initialization; Lower 256K of memory cleared; Enable parity checking and test parity in lower 256K memory
08	Setup Interrupt vector table; Initialize the first 120 Interrupt vectors with SPURIOUS_INT_HDLR and initialize INT 00-1F according to INT_TBL
09	Cache; CMOS checksum tested
0A	Set interrupt table; Initialize keyboard; Detect keyboard controller
0B	CMOS checksum; Video interface initialized
0C	Keyboard initialization; Video memory tested
0D	Video adapter initialized; OEM specific initializations
0E	Reserved
0F	DMA channel 0 tested with AA, 55, FF, 00 bit patterns
10	DMA channel 1 tested with AA, 55, FF, 00 bit patterns
11	DMA page register tested
12	Reserved
13	Reserved
14	Timer chip 8254 PIT timer 0 counter 2 tested
15	Verify 8259 PIC channel 1
16	Verify 8259 PIC channel 2
17	8259 PIC stuck bits tested; Turn Interrupt bits off and verify no Interrupt mask register is on
18	8259 PIC maskable IRQ's tested
19	NMI bit check tested and parity I/O checked
1A	Reserved
1B	Reserved
1C	Reserved
1D	Reserved
1E	Reserved
1F	CMOS XRAM checked for
20	Slot 0 EISA initialized and enabled
21	Slot 1 EISA initialized and enabled
22	Slot 2 EISA initialized and enabled
23	Slot 3 EISA initialized and enabled
24	Slot 4 EISA initialized and enabled
25	Slot 5 EISA initialized and enabled
26	Slot 6 EISA initialized and enabled
27	Slot 7 EISA initialized and enabled
28	Slot 8 EISA initialized and enabled
29	Slot 9 EISA initialized and enabled
2A	Slot 10 EISA initialized and enabled
2B	Slot 11 EISA initialized and enabled
2C	Slot 12 EISA initialized and enabled
2D	Slot 13 EISA initialized and enabled
2E	Slot 14 EISA initialized and enabled
2F	Slot 15 EISA initialized and enabled

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30	Memory size below 256K
31	Memory test over 256K
32	EISA memory tested found during slot initialization
3C	CMOS setup; Enter protected mode
3D	Mouse/adapter, CMOS
3E	Cache RAM
3F	Shadow RAM
41	Initialize floppy drive
42	Initialize hard drive
43	RS232 parallel
45	NPU
47	Speed for boot set
4E	Manufacturing loop; display any soft errors
4F	Security; ask for password if security is enabled
50	CMOS update
51	Enable NMI, cache memory
52	Adapter ROM's from C8000h to EFFFFH or F7FFFh initialized
53	Set time value for address 40 of BIOS
60	Virus protection setup
61	Boot speed
62	Numlock setup
63	Boot from Int 19
B0	NMI in protected
B1	Disable NMI
BE	Chipset default initialization
BF	Chipset program; initialization of system specific chipsets
C0	Cache on/off
C1	Memory size checked
C2	Base 256K tested
C3	DRAM page select tested
C4	Video switch
C5	Shadow RAM tested
C6	Cache program; configure cache memory
C8	Speed switch
C9	Shadow RAM tested
CA	OEM chipset initialized
FF	Boot from Int 19

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AWARD PnP BIOS

01	Reserved
02	Reserved
03	Initialize EISA registers (EISA BIOS only)
04	Reserved
05	Keyboard controller self-tested
06	Reserved
07	Verify CMOS Read/Write
09	OEM specific initialization; Configure Cyrix CPU register
0A	Issue CPU ID instruction; Initialize the first 32 interrupt vectors, initialize Int.'s 33 to 120, power management initialization
0B	PnP initialization; verify the RTC time, detect bad battery, read the CMOS data into the BIOS stack area, assign I/O and memory for any PCI devices
0C	Initialization of BIOS data area
0D	Program some of chipset's value; Measure the CPU for display, initialize the video
0E	Initialize APIC (multiprocessor BIOS only); Show startup screen message
0F	DMA channel 0 tested
10	DMA channel 1 tested
11	DMA page registers tested
12	Reserved
13	Reserved
14	Test 8254 0 counter 2
15	Test 8259 interrupt mask bit for channel 1
16	Test 8259 interrupt mask bit for channel 2
17	Reserved
19	Test 8259 functionality
1A	Reserved
1B	Reserved
1C	Reserved
1D	Reserved
1E	If an EISA NVM
1F-29	Reserved
30	Get size of base and extended memory
31	Test base and extended memory, Test base memory from 256K to 640K , test extended memory above 1MB
32	Test all on-board super I/O ports
33	Reserved
3A	Reserved
3B	Reserved
3C	Set flag to allow CMOS setup utility
3D	Install PS/2 mouse
3E	Try to turn on level 2
3F	Reserved
40	Reserved
41	Initialize floppy drive controller
42	Initialize hard drive controller
43	Initialize serial & parallel ports (PnP BIOS only)
45	Initialize math coprocessor
46-4D	Reserved
4E	Show all error messages on screen
4F	Ask for password, if needed
50	Write all CMOS values located in the BIOS stack back to CMOS
51	Reserved
52	Initialize all ISA ROM's; PCI initializations (PCI BIOS only), PnP initialization (PnP BIOS Only), setup shadow RAM, initialize power management
53	If not PnP BIOS, initialize ports; Initialize time in BIOS data area
54-5F	Reserved

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60	Setup virus protection for the boot sector
61	Try to turn on level 2 cache
62	program numlock & typematic speed
63	Boot system via Int 19h
B0	Unexpected interrupt in protected mode
B1	Unclaimed NMI occurred
BE	Program defaults into chipset
BF	Program remaining chipset values
C0	Init. all standard devices with defaults
C1	Auto detect on-board DRAM & cache
C3	Test first 26K DRAM
C5	Copy ROM BIOS to E000-FFFF
FF	System booting

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AWARD Elite (Version 4.51PG) BIOS

01	Processor test; Processor status verification
02	Processor test 2; Read/Write and verify all CPU registers
03	Initialize chips; Disable NMI, PIE, AIE, UEI, SQWV. Disable video, parity checking, DMA. Reset math coprocessor. Clear all page registers and CMOS shutdown. Initialize DMA controller 0 and 1. Initialize interrupt controllers 0 and 1.
04	Test memory refresh toggle
05	Blank video, initialize keyboard; Keyboard controller initialization
07	Test CMOS interface and battery
08	Set up low memory; Early chipset initialization, memory presence test, OEM chipset routines, clear low 64K memory, test first 64K memory
09	Early cache initialization; Cyrix CPU specific, CPU and cache initialization
0A	Set up interrupt vector table; Initialize first 120 interrupt vectors
0B	Test CMOS RAM checksum
0C	Initialize keyboard; Detect the type of keyboard controller
0D	Initialize video interface; Detect CPU clock, read CMOS location 14h to find the type of video in use, detect and initialize video adapter
0E	Test video memory; Write sign-on message to screen, setup shadow RAM
0F	Test DMA controller 0; BIOS checksum test, keyboard detect and initialization
10	Test DMA controller 1
11	Test DMA page registers
12-13	Reserved
14	Test timer counter 2
15	Test 8259-1 mask bits
16	Test 8259-2 mask bits
17	Test stuck 8259 interrupt bits; Test stuck key
18	Test 8259 interrupt functionality
19	Test stuck NMI bits (parity I/O check)
1A	Benchmark; Display CPU clock
1B-1E	Reserved
1F	Set EISA mode; If the EISA memory checksum is good then EISA is initialized. If it's not good then ISA tests and clear EISA mode flag
20	Enable slot 0; System board
21-2F	Enable slots 1-15
30	Size base and extended memory; Size the base memory from 256K to 640K and the extended memory above 1MB
31	Test base and extended memory; Test the base memory from 256K to 640K and the extended memory above 1MB using various bit patterns
32	Test EISA extended memory
33-3B	Reserved
3C	Setup enabled
3D	Initialize and install mouse if present
3E	Setup cache controller
40	Display virus protect disable or enable
41	Initialize floppy
42	Initialize hard drive
43	Detect & Init. serial & parallel ports
44	Reserved
45	Detect and Init. math coprocessor
46	Reserved
47	Reserved
48-4D	Reserved
4E	Mfg. POST loop, or display messages
4F	Security password
50	Write CMOS; Write CMOS back to RAM and clear screen
51	Pre-boot enable; Enable parity checking, enable NMI, enable cache before boot

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52	Initialize option ROM's; Initialize and ROM's present at locations C800h to EFFFFh
53	Initialize time value
60	Setup virus protect
61	Set boot speed
62	Setup numlock
63	Boot attempt
B0	Spurious
B1	Unclaimed NMI
BE	Chipset default initialization; Program chipset registers and power-on BIOS defaults.
BF	Chipset initialization; Reserved
C0	Turn off chipset cache
C1	Memory presence test; OEM specific, test the size of on-board memory
C5	Early shadow; OEM specific, early shadow enable for fast boot
C6	Cache presence test; External cache-size detection test
E1-EF	Setup pages
FF	Boot loader

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AWARD Version 6.0

CF	Test CMOS read/write functionality
C0	Early chipset initialization: Disable shadow RAM, L2 cache (socket 7 and below), program basic chipset registers
C1	Detect memory: Auto detection of DRAM size, type and ECC, auto detection of L2 cache (socket 7 and below)
C3	Expand compressed BIOS code to DRAM
C5	Call chipset hook to copy BIOS back to E000 & F000 shadow RAM
01	Expand the Xgroup codes located in physical memory address 1000:0
02	Reserved
03	Initial Superio_Early_Init switch
04	Reserved
05	Blank out screen; Clear CMOS error flag
06	Reserved
07	Clear 8042 interface; Initialize 8042 self test
08	Test special keyboard controller for Winbond 977 series Super I/O chips; Enable keyboard interface
09	Reserved
0A	Disable PS/2 mouse interface (optional); Auto detect ports for keyboard & mouse followed by a port & interface swap (optional); Reset keyboard for Winbond 977 series Super I/O chips
0B	Reserved
0C	Reserved
0D	Reserved
0E	Test F000h segment shadow to see whether it is read/write capable or not. If test fails, keep beeping the speaker
0F	Reserved
10	Auto detect flash type to load appropriate flash read/write codes into the run time area in F000 for ESCD & DMI support
11	Reserved
12	Use walking 1's algorithm to check out interface in CMOS circuitry. Also set real time clock power status and then check for overrride
13	Reserved
14	Program chipset default values into chipset. Chipset default values are MODBINable by OEM customers
15	Reserved
16	Initial Early_Init_Onboard_Generator switch
17	Reserved
18	Detect CPU information including brand, SMI type (Cyrix or Intel) and CPU level (586 or 686)
19	Reserved
1A	Reserved
1B	Initial interrupts vector table. If no special specified, all H/W interrupts are directed to SPURIOUS_INT_HDLR & S/W interrupts to SPURIOUS_soft_HDLR
1C	Reserved
1D	Initial EARLY_PM_INIT switch
1E	Reserved
1F	Load keyboard matrix (notebook platform)
20	Reserved
21	HPM initialization (notebook platform)
22	Reserved
23	Check validity of RTC value; Load CMOS settings into BIOS stack. If CMOS checksum fails, use default value instead; Prepare BIOS resource map for PCI & PnP use. If ESCD is valid, take into consideration of the ESCD's legacy information; Onboard clock generator initialization. Disable respective clock resource to empty PCI & DIMM slots; Early PCI initialization - Enumerate PCI bus number, assign memory & I/O resource, search for a valid VGA device & VGA BIOS, and put it into C000:0

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24	Reserved
25	Reserved
26	Reserved
27	Initialize INT 09 buffer
28	Reserved
29	Program CPU internal MTRR (P6 & PII) for 0-640K memory address; Initialize the APIC for Pentium class CPU; Program early chipset according to CMOS setup; Measure CPU speed; Invoke video BIOS
2A	Reserved
2B	Reserved
2C	Reserved
2D	Initialize multilanguage; Put information on screen display, including Award title, CPU type, CPU speed, etc...
2E	Reserved
2F	Reserved
30	Reserved
31	Reserved
32	Reserved
33	Reset keyboard except Winbond 977 series Super I/O chips
34	Reserved
35	Reserved
36	Reserved
37	Reserved
38	Reserved
39	Reserved
3A	Reserved
3B	Reserved
3C	Test 8254
3D	Reserved
3E	Test 8259 interrupt mask bits for channel 1
3F	Reserved
40	Test 9259 interrupt mask bits for channel 2
41	Reserved
42	Reserved
43	Test 8259 functionality
44	Reserved
45	Reserved
46	Reserved
47	Initialize EISA slot
48	Reserved
49	Calculate total memory by testing the last double last word of each 64K page; Program writes allocation for AMD K5 CPU
4A	Reserved
4B	Reserved
4C	Reserved
4D	Reserved
4E	Program MTRR of M1 CPU; initialize L2 cache for P6 class CPU & program cacheable range; Initialize the APIC for P6 class CPU; On MP platform, adjust the cacheable range to smaller one in case the cacheable ranges between each CPU are not identical
4F	reserved
50	Initialize USB
51	Reserved
52	Test all memory (clear all extended memory to 0)
53	Reserved
54	Reserved
55	Display number of processors (multi-processor platform)
56	Reserved

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57	Display PnP logo; Early ISA PnP initialization and assign CSN to every ISA PnP device
58	Reserved
59	Initialize the combined Trend Anti-Virus code
5A	Reserved
5B	Show message for entering AWDFLASH.EXE from FDD (optional feature)
5C	Reserved
5D	Initialize Init_Onboard_Super_IO switch; Initialize Init_Onboard_AUDIO switch
5E	Reserved
5F	Reserved
60	Okay to enter Setup utility
61	Reserved
62	Reserved
63	Reserved
64	Reserved
65	Initialize PS/2 mouse
66	Reserved
67	Prepare memory size information for function call: INT 15h ax=E820h
68	Reserved
69	Turn on L2 cache
6A	Reserved
6B	Program chipset registers according to items described in Setup & Auto-Configuration table
6C	Reserved
6D	Assign resources to all ISA PnP devices; Auto assign ports to onboard COM ports if the corresponding item in Setup is set to "AUTO"
6E	Reserved
6F	Initialize floppy controller; Setup floppy related fields in 40:hardware
70	Reserved
71	Reserved
72	Reserved
73	Enter AWDFLASH.EXE if: AWDFLASH.EXE is found in floppy dive and ALT+F2 is pressed
74	Reserved
75	Detect and install all IDE devices: HDD, LS120, ZIP, CDROM...
76	Reserved
77	Detect serial ports and parallel ports
78	Reserved
79	Reserved
7A	Detect and install coprocessor
7B	Reserved
7C	Reserved
7D	Reserved
7E	Reserved
7F	Switch back to text mode if full screen logo is supported: if errors occur, report errors & wait for keys, if no errors occur or F1 key is pressed continue - Clear EPA or customization logo
80	Reserved
81	Reserved
82	Call chipset power management hook: Recover the text fond used by EPA logo (not for full screen logo), If password is set, ask for password
83	Save all data in stack back to CMOS
84	Initialize ISA PnP boot devices
85	Final USB initialization; NET PC: Build SYSID structure; Switch screen back to text mode; Set up ACPI table at top of memory; Invoke ISA adapter ROM's; Assign IRQ's to PCI devices; Initialize APM; Clear noise of IRQ's
86	Reserved
87	Reserved
88	Reserved

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89	Reserved
90	Reserved
91	Reserved
92	Reserved
93	Read HDD boot sector information for Trend Anti-Virus code
94	Enable L2 cache; Program boot up speed; Chipset final initialization; Power management final initialization; Clear screen and display summary table; Program K^ write allocation; Program P6 class write combining
95	Program daylight saving; Update keyboard LED and typematic rate
96	Build MP table; Build and update ESCD; Set CMOS century to 20h or 19h; Load CMOS time into DOS timer tick; Build MSIRQ routing table
FF	Boot attempt (INT 19h)

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Chips & Technologies BIOS

00	Error in POS register
01	CPU flag register failed
02	CPU register test failed
03	BIOS ROM checksum failed
04	DMA controller test failed
05	System timer IC failed
06	Base 64K RAM failed address test: not installed, misconfigured, or bad addressing
07	Base 64K RAM failed data test
08	Interrupt controller failed
09	Hot (unexpected) interrupt occurred
0A	System timer does not interrupt
0B	CPU still in protected mode
0C	DMA page registers failed
0D	Refresh not occurring
0E	Keyboard controller not responding
0F	Could not enter protected mode
10	GDT or IDT failed, Keyboard controller failed
11	LDT register failed, Keyboard controller failed
12	Task register failed, Keyboard controller failed
13	LSL instruction failed, keyboard controller failed
14	LAR register failed, Keyboard controller failed
15	VERR/VERW failed, Keyboard controller failed
16	Keyboard controller gate A20 failed
17	Exception failed/unexpected exception
18	Shutdown during memory test
19	Last used error code
1A	Copyright checksum error
1B	Shutdown during memory sizing
1C	Chipset initialization
50	Initialize hardware
51	Initialize timer
52	Initialize DMA controller
53	Initialize 8259 programmable interrupt controller
54	Initialize system chipset
55	Setup EMS configuration
56	Entering protected mode for first time
57	Size memory chips
58	Configure memory chip interleave
59	Exiting protected mode for first time
5A	Determine system board memory size
5B	Relocate shadow RAM
5C	Configure EMS
5D	Set up wait state configuration
5E	Re-test 64K RAM
5F	Test shadow RAM
60	Test CMOS RAM
61	Test video
62	Test and initialize DDNIL bits
63	Test protected mode interrupt
64	Test address line A20
65	Test memory address lines
66	Test memory
67	Test extended memory
68	Test timer interrupt
69	Test real time clock (RTC)
6A	Test keyboard

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6B	Test 80x87 math chip
6C	Test RS232 serial ports
6D	Test parallel ports
6E	Test dual card
6F	Test floppy drive controller
70	Test hard drive controller
71	Test keylock
72	Test pointing device
90	Setup RAM
91	Calculate CPU speed
92	Check configuration
93	Initialize BIOS
94	POST Bootstrap
95	Reset IC's
96	PEAK: System board POS. NEAT/OC8291 ELEAT: Test /initialize cache RAM and controller.
97	VGA power on diagnostics and setup
98	Adapter BIOS
99	Re-initialize DDNIL bits
A0	Exception 0
A1	Exception 1
A2	Exception 2
A3	Exception 3
A4	Exception 4
A5	Exception 5
A6	Exception 6
A7	Exception 7
A8	Exception 8
A9	Exception 9
AA	Exception A
AB	Exception B
AC	Exception C
AD	Exception D
C0	System board memory failure
C1	I/O channel check activated
C2	Watchdog timer timeout
C3	Bus timer timeout

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Compaq General BIOS

00	Initialize flags, MSW,IDTLIN
01	Read manufacturing jumper
02	8042 received read command
03	No response from 8042
04	Look for ROM at E000
05	Look for ROM at C800
06	Normal CMOS reset code
08	Initialize 8259,80287
09	Reset code in CMOS byte
0A	Vector vis 40:67 reset function
0B	Vector vis 40:67 with E01 function
0C	Boot reset function
0D	Test #2 8254 PIT counter 0
0E	Test #2 8254 PIT counter 2
0F	Warm boot
10	PPI disabled, test 8254 PIT's 0 and 1
11	Initialize (blast) VDU controller
12	Clear screen; turn ON video
13	Test time 0
14	Disable RTC interrupts
15	Check battery power
16	Battery has lost power
17	Clear CMOS Diags.
18	Test base memory (First 128K)
19	Initialize base memory
1A	Initialize VDU adapters
1B	The system ROM
1C	CMOS checksum
1D	DMA controller/page registers
1E	Test keyboard controller
1F	Test 286 protected mode
20	Test real and extended memory
21	Initialize time-of-day
22	Initialize 287 coprocessor
23	Test the keyboard and 8042
24	Reset A20, set default CPU speed
25	Test diskette subsystem
26	Test fixed disk subsystem
27	Initialize parallel printer
28	Perform search for optional ROM's
29	Test valid system configuration
2A	Clear screen
2B	Check for invalid time and date
2C	Optional ROM search
2D	Test timer 2
2F	Write to diagnostic byte
30	Clear first 128K bytes of RAM
31	Load interrupt vectors 70-77
32	Load interrupt vectors 00-1F
33	Initialize MEMSIZE and RESETWD
34	Verify CMOS checksum
35	CMOS checksum is not valid
36	Check battery power
37	Check for game adapters
38	Check for Serial ports
39	Check for parallel printer ports
3A	Initialize port and comm time-outs

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3B	Flush keyboard buffer
40	Save RESETWD value
41	Check RAM refresh
42	Start write of 128K RAM test
43	Reset parity checks
44	Start verify of 128K RAM test
45	Check for parity errors
46	NO RAM errors
47	RAM error detected
50	Check for dual frequency in CMOS
51	Check CMOS VDU configuration
52	Start VDU ROM search
53	Vector to VDU option ROM's
54	Initialize first display adapter
55	Initialize second display adapter
56	No display adapters installed
57	Initialize primary VDU mode
58	Start of VDU test (each adapter)
59	Check existence of adapter
5A	Check VDU registers
5B	Start screen memory test
5C	End test of adapter, clear memory
5D	Error detected on an adapter
5E	Test the next adapter
5F	All adapters successfully tested
60	Start of memory tests
61	Enter protected mode
62	Start memory sizing
63	Get CMOS size
64	Start test of real memory
65	Start test of extended memory
66	Save size memory (base, ext)
67	128K-option installed CMOS bit
68	Prepare to return to real mode
69	Back in real mode-successful
6A	Protected mode error during test
6B	Display error message
6C	End of memory test
6D	Initialize KB OK string
6E	Determine size to test
6F	Start MEMTEST
70	Display XXXXXKB OK
71	Test each RAM segment
72	High order address test
73	Exit MEMTEST
74	Parity error on bus
75	Start protected mode test
76	Prepare to enter protected mode
77	Test software exceptions
78	Prepare to return to real mode
79	Back in real mode-successful
7A	Back in real mode-error occurred
7B	Exit protected mode
7C	High order address test failure
7D	Entered cache controller test
7E	Programming memory cache
7F	Copy system ROM to high RAM
80	Start of 8042 test
81	Do 8042 self test

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82	Check result received
83	Error result
84	OK 8042, Init mode=5D
86	Start test, reset keyboard
87	Got acknowledge, read result
88	Got result, check it
89	Test for stuck keys
8B	Test keyboard interface
8A	Key seems to be stuck
8C	Got result, check it
8D	End of test, no errors
90	Start of CMOS test
91	CMOS seems to be OK
92	Error on CMOS read,write test
93	Start of DMA controller test
94	Page registers seem to be OK
95	DMA controller is OK
96	8237 initialization is complete
97	Start of NCA RAM test
A0	Start of diskette tests
A1	FDC reset active (3F2h Bit 2)
A2	FDC reset inactive (3F2h Bit 2)
A3	FDC motor on
A4	FDC time-out error
A5	FDC failed reset
A6	FDC passed reset
A8	Start to determine drive type
A9	Seek operation initialized
AA	Waiting for FDC seek status
AF	Diskette tests complete
B0	Start of fixed drive tests
B1	Combo board not found-exit
B2	Combo controller failed-exit
B3	Testing drive 1
B4	Testing drive 2
B5	Drive error (error condition)
B6	Drive failed (failed to respond)
B7	No fixed drives-exit
B8	Fixed drive tests complete
B9	Attempt to boot diskette
BA	Attempt to boot fixed drive
BB	Boot attempt failed FD/HD
BC	Jump to boot record
BD	Drive error, retry booting
BE	Weitek coprocessor test
D0	Entry to clear memory routine
D1	Ready to go to protected mode
D2	Ready to clear extended memory
D3	Ready to reset back to real mode
D4	Back in real mode
D5	Clear base memory
DD	Built-in self-test failed
E0	Ready to replace E000 ROM
E1	Completed E000 ROM replacement
E2	Ready to replace EGA ROM
E3	Completes EGA ROM replacement

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Compaq 286 Deskpro BIOS

01	Central processing unit
02	Coprocessor
02	Direct memory access Interrupt
04	controller
05	Port 61
06	Keyboard controller
07	CMOS
08	CMOS
09	CMOS
10	Programmable timer
11	Refresh detect test
12	Speed test
14	Speaker test
21	Memory read/write
24	Memory address
25	Walking I/O
31	Keyboard short test
32	Keyboard long test
33	Keyboard LED test
35	Security lock test
41	Printer failed
42	Printer date, interrupt
43	Printer pattern test
48	Printer failed
51	VDU controller test
52	VDU controller test
53	VDU attribute test
54	VDU character set test
55	VDU 80 x 25 mode
56	VDU 80 x 25 mode
57	VDU 40 x 25 mode
60	Diskette drive ID test
61	Format
62	Read test
63	Write/read compare test Random
64	seek
65	ID media test
66	Speed test
67	Wrap test
68	Write protect test
69	Reset controller test

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Compaq 386 Deskpro BIOS

01	I/O ROM error
02	System memory board failure
12	System option error
13	Time and date not set
14	Memory size error
21	Memory error
23	Memory address error
25	Memory error
26	Keyboard error
33	Keyboard controller error
34	Keyboard or system unit error
41	Printer error
42	Monochrome adapter failure
51	Display adapter failure
61	Diskette controller failure
62	Diskette boot recorder error
65	Ext. FDC failed got to internal F
6A	Floppy port address conflict
6B	Floppy port address conflict Coprocessor
72	detection

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Compaq 486 Deskpro BIOS

01	CPU test failed
02	Coprocessor or Weitek error
03	DMA page registers
04	Interrupt controller master
05	Port 61 error
06	Keyboard controller self test
07	CMOS RAM test failed
08	CMOS interrupt test failed
09	CMOS clock load data test
10	Programmable timer
11	Refresh detect test failed
12	Speed test slow mode out of range Protected mode
13	test failed
14	Speaker test failed
16	Cache memory configuration
19	Installed devices test
21	Memory machine ID test failed
22	Memory system ROM checksum
23	Memory read/write test failed
24	Memory address test failed
25	Walking I/O test failed
26	Increment pattern test failed
31	Keyboard short test, 8042
32	Keyboard long test failed
33	Keyboard LED test, 8042
34	Keyboard typematic test failed
41	Printer failed or not connected
42	Printer data register failed
43	Printer pattern test
48	Printer not connected
51	Video controller test failed
52	Video memory test failed
53	Video attribute test failed
54	Video character set test failed
55	Video 80 x 25 mode
56	Video 80 x 25 mode
57	Video 40 x 25 mode test failed
58	Video 320 x 200 mode color set 1
59	Video 320 x 200 mode color set 1
60	Diskette ID drive types test
61	Diskette format failed
62	Diskette read test failed
63	Diskette write, read, random seek
65	Diskette media ID failed
66	Diskette speed test failed
67	Diskette wrap test failed
68	Diskette write protect test
69	Diskette reset controller test
82	Video memory test failed
84	Video adapter test failed

Compaq Video BIOS

00	Entry into video ROM
01	Test alternate adapters
02	Perform vertical sync tests
03	Perform horizontal sync tests
04	Perform static system tests

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05 Perform bug tests
06 Peform configuration tests
07 Perform alternate ROM tests
08 Run color gun off tests
09 Run color gun on tests
0A Test video memory
0B Check that adapter board is present Error...illegal
10 configuration
20 Error...no vertical sync present Error...vertical sync
21 out of range
30 Error...no horizontal sync present Error...color register
40 failure
50 Error...slot type conflict failure
51 Error...video memory conflict error Error...ROM
52 conflict error
60 Error...red DAC stuck low
61 Error...green DAC stuck low
62 Error...blue DAC stuck low
63 Error...DAC stuck high
64 Error...red DAC fault
65 Error...green DAC fault
66 Error...blue DAC fault
70 Error...bad alternate ROM version Error...color gun
80 stuck on
90 Error...color gun stuck off
A0 Error...video memory failure Error...equipment failure
F0 Video POSY complete
00

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Dell BIOS

01	CPU register test in progress
02	CMOS read/write test failed
03	BIOS ROM checksum bad
04	8254 programmable interrupt controller failed
05	DMA controller initialization failed
06	DMA page-register test failed
08	RAM refresh verification failed
09	Starting first-64K RAM test
0A	First-64KB RAM IC or data line bad
0B	First-64KB RAM odd/even logic bad
0C	First-64KB address line bad
0D	First-64KB parity error
10	Bit 0 bad in first 64KB
11	Bit 1 bad in first 64KB
12	Bit 2 bad in first 64KB
13	Bit 3 bad in first 64KB
14	Bit 4 bad in first 64KB
15	Bit 5 bad in first 64KB
16	Bit 6 bad in first 64KB
17	Bit 7 bad in first 64KB
18	Bit 8 bad in first 64KB
19	Bit 9 bad in first 64KB
1A	Bit 10 bad in first 64KB
1B	Bit 11 bad in first 64KB
1C	Bit 12 bad in first 64KB
1D	Bit 13 bad in first 64KB
1E	Bit 14 bad in first 64KB
1F	Bit 15 bad in first 64KB
20	Slave DMA register bad
21	Master DMA register bad
22	Master interrupt-mask register bad
23	Slave interrupt-mask register bad
25	Loading interrupt vectors
27	Keyboard-controller test failed
28	CMOS RAM battery bad
29	CMOS configuration validation in progress
2B	Video-memory test failed
2C	Video initialization failure
2D	Video-retrace failure
2E	Searching for a video ROM
30	Switching to video ROM
31	Monochrome operation OK
32	Color (CGA) operation OK
33	Color operation OK
34	Timer-tick interrupt in progress (or bad)
35	CMOS shutdown test in progress (or bad)
36	Gate A20 bad
37	Unexpected interrupt in protected mode
38	RAM test in progress or high address line is bad
3A	Interval timer channel 2 bad
3B	Time-of-day test bad
3C	Serial-port test bad
3D	Parallel -port test bad
3E	Math co-processor test bad
3F	Cache-memory test bad

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DTK BIOS

01	Testing the CPU
03	Initialize the 8259 interrupt controller
05	Initialize the video board - MCA & CGA
0D	Initialize the 8237 DMA controller
0E	Initialize the DMA 74612 page registers
12	Test the 8042 keyboard controller
16	Test the DMA 7237 controller and 8254 programmable interrupt timer
22	Testing DRAM refresh circuitry
25	Base 64KB memory test
30	Set up system stack
33	Read-system configuration through 8042 keyboard controller
37	Test keyboard clock and data line
40	Determine video type
44	Locate and test, if present, MDA and CGA video
48	Initialize video 80 x 25 mode
4D	Display DTK BIOS copyright message
4F	Check serial and parallel ports
50	Check floppy disk controller
55	Check shadow RAM
58	Display total memoryand switch to real mode
5A	Successful switch back to real mode
60	Check hard disk drive controller
62	Initialize floppy drive
65	Initialize hard drive
67	Initialize the floppy disk drive and the hard disk drive
6A	Disable gate A20 and test math coprocessor
70	Set system date and time RTC-146918
77	Call interrupt 19 boot loader

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Eurosoft/Mylex BIOS

01	CPU test failed
02	DMA page register test failed
03	Keyboard controller test failed
04	BIOS ROM checksum error
05	Keyboard command test failed
06	CMOS RAM test failed
07	RAM refresh test failed
08	First-64KB memory test failed
09	DMA controller test failed
0A	Initialize DMA controller
0B	Interrupt test failed
0C	Checking RAM size
0D	Initializing video system
0E	Video BIOS checksum failed
10	Search for monochrome video adapter
11	Search for color video adapter
12	Word-splitter and byte-shift test failed
13	Keyboard test failed
14	RAM test failed
15	System timer test failed
16	Initialize keyboard controller output port
17	Keyboard test failed
18	Initialize keyboard
19	Real-time clock test failed
1A	Math coprocessor test failed
1B	Reset floppy and hard drive controllers
1C	Initialize floppy drive
1D	Initialize the hard drive
1E	Locate adapter ROM's from C800h to DFFFh
1F	Locate and initialize serial and parallel ports
20	Initialize time of day in RTC
21	Locate adapter ROM's from E000h to EFFFh
22	Search for boot device
23	Boot from floppy disk
24	Boot from hard disk
25	Gate A20 enable/disable failure
26	Parity error
30	DDNIL bit-scan failure
FF	Fatal error...system halted

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Eurosoft 4.71 BIOS

03	DMA page registers tested
04	DMA page registers failed
05	Keyboard tested
06	Keyboard test failed
07	Keyboard self-test passed
08	Keyboard self-test failed
09	8042 keyboard controller checking links
0A	8042 keyboard controller unable to read links
0B	RATMOD/DIAG link
0C	Keyboard port 60h tested
0D	Keyboard failed port 60h test
0E	Keyboard parameter tested
0F	Keyboard parameter test failed
10	Keyboard command byte read
11	Keyboard command byte failed read
12	Keyboard command byte read OK
13	Keyboard command byte corrupt
14	RAM-refresh toggle switch
15	RAM-refresh clock not correct
16	RAM bit test passed
17	RAM bit test failed
18	RAM parity tested
19	RAM parity error
1A	CMOS RAM tested
1B	CMOS RAM test failed
1C	CMOS battery OK
1D	CMOS battery failed
1E	CMOS checksum passed
1F	CMOS checksum failed
20	CMOS battery fault bit set
21	Master DMA controller 1 tested
21	Slave DMA controller 2 tested
22	Master DMA controller 1 failed
23	Slave DMA controller 2 failed
24	Protected mode entered successfully
25	RAM test completed
26	BIOS RAM checksum tested
27	BIOS RAM checksum test failed
28	Protected mode exit successful
29	Keyboard power-up reply received
2A	Keyboard power-up reply missing
2B	Keyboard disable command tested
2C	Keyboard disable command failed
2D	Checking for video system
2E	POST errors have been reported
2F	About to halt
30	Protected mode entered safely
31	RAM test complete
32	Master interrupt controller (PIC 1) tested
33	Master interrupt controller (PIC 1) failed
34	Slave interrupt controller (PIC 2) tested
35	Slave interrupt controller (PIC 2) failed
36	Chipset initialization
37	Chipset initialization failed
38	BIOS shadowing tested
39	BIOS shadowing failed
3A	Video BIOS shadowing tested

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3B Video BIOS shadowing failed

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Mylex BIOS

01	CPU test
02	DMA page register tested
03	Keyboard controller tested
04	ROM BIOS checksum
05	Send keyboard command test
06	CMOS RAM test
08	RAM-refresh test
09	First-64K memory test
0A	DMA controller test
0B	Initialize DMA controller
0C	Interrupt test
0D	Determine RAM size
0E	Initialize video and verify EGA or VGA checksum
10	Search for monochrome card
11	Search for color card
12	Word-splitter and byte-shifter test
13	Keyboard tested
14	RAM tested
15	System timer tested
16	Initialize keyboard-controller output port
17	Keyboard-interrupt test

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HP Vectra BIOS

01	LED test
02	Processor test
03	System (BIOS) ROM test
04	RAM refresh timer test
05	Interrupt RAM test
06	Shadow the system ROM BIOS
07	CMOS RAM test
08	Internal cache memory test
09	Initialize the video card
10	Test external cache
11	Shadow option ROM's
12	Memory subsystem test
13	Initialize EISA/ISA hardware
14	8042 keyboard controller self test
15	Timer 0 / Timer 2 test
16	DMA subsystem test
17	Interrupt controller test
18	RAM address line independence test
19	Size extended memory
20	Real mode memory test (first 640K)
21	Shadow RAM test
22	Protected mode RAM test (extended RAM)
23	Real time clock test
24	Keyboard test
25	Mouse test
26	Hard disk test
27	LAN test
28	Flexible disk controller subsystem test
29	Internal numeric coprocessor test
30	Weitek coprocessor test
31	Clock speed switching test
32	Serial port test
33	Parallel port test

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02	Verify real mode
03	Disable NMI
04	Get processor type
06	Initialize system hardware
08	Initialize chipset with POST values
09	Set IN-POST flags
0A	Initialize CPU registers
0B	Enable CPU registers
0C	Initialize cache to POST values
0E	Initialize I/O component
0F	Initialize local IDE bus
10	Initialize power management
11	Load alternate registers
12	Restore CPU control word during warm boot
13	Initialize PCI bus mastering devices
14	Initialize keyboard controller
16	BIOS ROM checksum
17	Initialize cache before memory size
18	Initialize 8254 timer
1A	Initialize DMA controller
1C	Reset PIC
20	Test DRAM refresh
22	Test 8742 keyboard controller
24	Set ES segment register to 4GB
26	Enable A-20 line
28	Autosize DRAM
29	Initialize POST memory manager
2A	Clear 512K base RAM
2C	RAM address line failure
2E	RAM data failure, low byte
2F	Enable cache before BIOS shadow
30	RAM data failure, high byte
32	Test CPU, BUS clock frequency
33	Initialize POST dispatch manager
34	Test CMOS RAM
35	Initialize alternate chipset registers
36	Warm start shut-down
37	Reinitialize chipset (MB only)
38	Shadow system BIOS ROM
39	Reinitialize cache (MB only)
3A	Autosize cache
3C	Configure advanced chipset registers
3D	Load alternate registers new CMOS values
40	Set initial CPU speed
42	Initialize interrupts
44	Initialize BIOS interrupts
45	POST device initialization
46	Check ROM copyright notice
47	Initialize manager for PCI option ROM's
48	Check video config against CMOS
49	Initialize manager for PCI option ROM's
4A	Initialize all video adapters
4B	Display quiet boot screen
4C	Shadow video BIOS
4E	Display BIOS copyright notice
50	Display CPU type & speed
51	Initialize

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52	Test keyboard
54	Set key click if enabled
56	Enable keyboard
58	Test for unexpected interrupts
59	Initialize POST display service
5A	Display "Press F2 to Enter Setup"
5B	Disable CPU cache
5C	Test RAM, 512-640K
60	Test extended memory
62	Test extended memory address lines
64	Jump to user patch 1
66	Configure advanced cache registers
67	Initialize multi-processor APIC
68	Enable external & processor caches
69	Set up SMM area
6A	Display external L2 cache size
6C	Display shadow area message
6E	Display high address for UMB recovery
70	Display error message
72	Check for configuration errors
74	Test real time clock
76	Check for keyboard errors
7A	Test for key lock on
7C	Set up hardware interrupt vectors
7E	Initialize coprocessor, if present
80	Disable onboard super I/O ports
81	Late POST device initialization
82	Detect & install external RS-232 ports
83	Configure non-MDC IDE controllers
84	Detect & install external parallel ports
85	Initialize PnP ISA devices
86	Reinitialize onboard I/O ports
87	Configure motherboard configurable devices
88	Initialize BIOS data area
89	Enable NMI's
8A	Initialize extended BIOS data area
8B	Test & initialize PS/2 mouse
8C	Initialize floppy controller
8F	Determine number of ATA drives
90	Initialize hard disk controllers
91	Initialize local BUS HD controllers
92	Jump to user patch 2
93	Build MPTABLE for multiprocessor boards
94	Disable A-20 line
95	Install CD-ROM for boot
96	Clear huge ES segment register
97	Fix up multiprocessor table
98	Search for options ROM's
99	Check for smart drive
9A	Shadow ROM option
9C	Set up power management
9E	Enable hardware interrupts
9F	Determine number of ATA & SCSI drives
A0	Set time of day
A2	Check key lock
A4	Initialize typematic rate
A8	Erase F2 prompt
AA	Scan for F2 keystroke
AC	Enter SETUP

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AE	Clear IN-POST flag
B0	Check for errors
B2	POST done, prepare for boot
B4	One short beep before boot
B5	Terminate quiet boot
B6	Check password (optional)
B8	Clear global descriptor table
B9	Clean up all graphics
BA	Initialize DMI parameters
BB	Initialize PnP option ROM's
BC	Clear parity checkers
BD	Display multi boot menu
BE	Clear screen optional
BF	Check virus and backup reminders
C0	Try to boot with Int 19
C1	Initialize POST error manager
C2	Initialize error logging
C3	Initialize error display function
C4	Initialize system error handler
E0	Initialize the chipset
E1	Initialize the bridge
E2	Initialize the processor
E3	Initialize system timer
E4	Initialize system I/O
E5	Check force recovery boot
E6	Checksum BIOS ROM
E7	Got to BIOS
E8	Set huge segment
E9	Initialize multiprocessor
EA	Initialize OEM special code
EB	Initialize PIC & DMA
EC	Initialize memory type
ED	Initialize memory type
EE	Shadow boot block
EF	System memory test
F0	Initialize interrupt vectors
F1	Initialize runtime clock
F2	Initialize video
F3	Initialize beeper
F4	Initialize BOOT
F5	Clear huge segment
F6	Boot to mini-DOS
F7	Boot to full DOS

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IBM AT BIOS

01	CPU flag and register tested
02	BIOS ROM checksum tested
03	CMOS shutdown byte 0F tested
04	8254 PIT channel 0 tested
05	8254 PIT channel 1 tested
06	8237 DMA initialize registers test 0
07	8237 DMA initialize registers test 1
08	DMA page register tested
09	Memory refresh tested
0A	Soft reset tested
0B	8042 keyboard controller reset
0C	8042 keyboard controller reset OK
0D	8042 keyboard controller reset
0E	Memory tested
0F	I/P buffer switch settings obtained
DD	RAM error
11	Protected mode initialized
12	Protected mode registers tested
13	8259 PIC #2 initialized
14	Temporary Interrupt vectors setup
15	BIOS Interrupt vectors obtained
16	CMOS checksum and battery OK
17	Defective CMOS battery flag set
18	CMOS set checked
19	CMOS return address byte set
1A	Temporary stack set
1B	Segment address 01-0000, second 64K, tested
1C	Memory size; See if 512K or 640K present
1D	Segment address 10-000, over 640K, tested
1E	Expansion memory set as is reported by the CMOS
1F	Address lines 19-23 tested
20	Preparing to return to protected mode
21	Return from protected mode successful; 6845 video controller initialized and started
22	6845 video controller tested
23	EGA/VGA BIOS tested
24	8259PIC Read/Write mask register with 1's and 0's
25	Interrupt mask registers tested
26	Unexpected Interrupts checked for; Error 101 displayed
27	System board tested: POST logic
28	Unexpected NMI Interrupts tested for
29	8253 PIT timer tested
2A	8253 timer tested
2B	8253 timer initialized; System board error
2C	8253 timer Interrupt initialization; System board failure
2D	8042 keyboard controller checked for command
2F	8042 keyboard checked for warm boot
30	Shutdown return 2 set
31	Protected mode enabled
32	Address lines 0-15
33	Next block of 64K RAM tested
34	Real mode enabled
35	8042 keyboard controller tested
36	Check for keyboard error
38	8042 keyboard controller failed
3A	8042 keyboard controller initialized
3B	Expansion ROM's checked for in 2K blocks

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3C	Floppy drive controller tested
3D	Initialize the floppy drive controller
3E	Initialize hard disk controller
3F	Initialize parallel port
40	Hardware Interrupt enabled
41	System code at segment E0000h checked for
42	Exit to system code
43	Call to boot loader
44	Boot from fixed disk
45	Unable to boot from fixed disk; Boot to BASIC
81	Descriptor table built
82	Virtual mode started
90-B6	Memory and bootstrap testing done
F0	Data segment set
F2	Interrupts tested
F1	Exception Interrupts tested
F3	Verify 286 protected mode instructions (LDT/SDT and LTR/STR)
F4	Verify 286 protected mode instructions (Bound instruction)
F5	Verify 286 protected mode instructions (Push and pop)
F6	Verify 286 protected mode instructions (Access rights)
F7	Verify 286 protected mode instructions (RPL field adjusted)
F8	Verify 286 protected mode instructions (LAR function)
F9	Verify 286 protected mode instructions (LSL instruction)
FA	Verify 286 protected mode instructions (Memory chip selected)

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IBM PS/2 (Micro Channel) BIOS

00	CPU tested with patter FFAA0055
01	CPU 32 register tested
02	BIOS ROM checksum tested
03	System port 94 enabled and checked
04	POST registers, port 102 enabled and checked
05	POST registers port 96 enabled and tested
06	CMOS shutdown byte 0F tested
07	CMOS extended port 74-76 enabled and tested
08	DMA and page registers tested (ports 2, 18, 1A and 1C)
09	DMA initialized
0A	Memory refresh tested
0B	8042 keyboard controller buffers tested (ports 61 and 64)
0C	8042 keyboard controller internal test (port 60)
0D	8042 keyboard controller internal test continued
0E	8042keyboard controller self test error
0F	Memory sized and setup
10	First 512K base memory tested
11	Base memory error, system halted
12	Protected mode instructions tested; Keyboard commands tested
13	PIC Interrupt controller 1 (master) tested
14	PIC Interrupt controller 2 (slave) tested
15	Initialize 120 Interrupt vectors
16	Initialize 16 extended vectors
17	CMOS/RTC tested; CMOS byte 0D tested
18	CMOS/RTC checksum tested
19	CMOS/RTC battery tested
1A	Check for soft or hard reset
1B	Protected mode initialization
1C	Protected mode stack set; Pointer to end of first 64K set
1D	Low memory size tested in protected mode
1E	Memory size information saved
1F	Memory split address setup
20	Check for extended memory beyond 64MB
21	Test memory-address bus lines
22	Clear parity error and channel lock
23	Initialize interrupt 0
24	Check CMOS RAM validity
25	Write keyboard-controller command byte
40	Check valid CMOS RAM and video system
41	Display error code 160
42	Test registers in both interrupt controllers
43	Test interrupt controller registers
44	Test interrupt mask registers
45	Test NMI
46	NMI error has been detected
47	Test system timer 0
48	Check system speaker clock
49	Test system timer 0 count
4A	Test system timer 1 count
4B	Check if timer interrupt occurred
4C	Test timer 0 for improper operation (too fast or too slow)
4D	Verify timer interrupt 0
4E	Check 8042 keyboard controller
4F	Check for soft reset
50	Prepare for shutdown
51	Start protected mode test
52	Test memory in 64KB increments

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53	Check if memory test done
54	Return to real mode
55	Test for regular or manufacturing mode
56	Disable the keyboard
57	Check for keyboard self test
58	Keyboard test passed
59	Test the keyboard controller
5A	Configure the mouse
5B	Disable the mouse
5C	Initialize interrupt vectors
5D	Initialize interrupt vectors
5E	Initialize interrupt vectors
60	Save DDNIL status
61	Reset floppy drive
62	Test floppy drive
63	Turn floppy-drive motor off
64	Set up serial ports
65	Enable real time clock interrupt
66	Configure floppy drives
67	Configure hard drives
68	Enable system CPU arbitration
69	Scan for adapter ROM's
6A	Verify serial and parallel ports
6B	Set up equipment byte
6C	Set up configuration
6D	Set keyboard-typematic rate
6E	Call Int. 19 boot loader

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Landmark Jumpstart XT BIOS

01	Jump to reset area in BIOS ROM
02	Initialize DMA page register
03	Initialize DMA refresh register
04	Clear all RAM
05	Perform RAM test on first 64KB
06	Clear first 64KB
07	Initialize BIOS stack to 0FC0h
08	Set the equipment flag based on XT switches
09	Initialize default-interrupt vectors
0A	Initialize the 8255 parallel interface, if it exists
0B	Initialize the 8259 PIT and enable interrupts
0C	Setup adapters and peripherals
0D	Setup video system
0E	Initialize the video system
0F	Initialize the equipment
10	Initialize memory configuration
11	Setup system timer function
12	Initialize system timer
13	Setup time-of-day function
14	Initialize time of day from RTC data
15	Setup and initialize "print screen" function
16	Setup and initialize cassette interface, if available
17	Setup and initialize bootstrap function
18	Setup and initialize keyboard function
19	Enable speaker
1A	Setup system timer
1B	Enable the RTC
1C	Setup timer 2
1D	Determine memory size; write 55Aa/AA55 to first and last word in segment
1E	Read first and last word of segment
1F	Compare first and last words
20	Report found memory size of segment
21	Perform BIOS ROM checksum test
22	Perform complete RAM testing on cold boot
23	Move system stack to bottom of memory and save pointer 40:0E
24	Reset parity after RAM sizing
25	Enable timer and keyboard interrupts
26	Setup the serial and parallel ports
27	Setup the game port
28	Setup the floppy-disk controller
29	Scan for optional ROM's in 2KB chucks from C8000h
2A	Call the boot loader

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Microid Research BIOS v1.0a

01	Chipset problem
02	Disable NMI and DMA
03	Check BIOS ROM checksum
04	Test DMA page register
05	Keyboard controller test
06	Initialize the RTC, 8237, 8254, and 8259
07	Check memory refresh
08	DMA master test
09	OEM specific test
0A	Test memory bank 0
0B	Test PIC units
0C	Test PIC conditions
0D	Initialize PIT channel 0
0E	Initialize PIT channel 2
0F	Test CMOS RAM battery
10	Check video ROM
11	Test RTC
12	Test keyboard controller
13	OEM specific test
14	Run memory test
15	Keyboard controller
16	OEM specific test
17	Test keyboard controller
18	Run memory test
19	Execute OEM memory test
1A	Update RTC contents
1B	Initialize serial ports
1C	Initialize parallel ports
1D	Test math coprocessor
1E	Test floppy disk
1F	Test hard disk
20	Validate CMOS contents
21	Check keyboard lock
22	Set NUM lock on keyboard
23	OEM specific test
29	Test adapter ROM's
2F	Call interrupt 19 boot loader

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Microid Research Contemporary BIOS

03	ROM BIOS checksum failure
04	DMA page register failure
05	Keyboard controller selftest failure
08	Memory refresh circuitry failure
09	Master 16-bit DMA controller failure
09	Slave 8-bit DMA controller failure
0A	Base 64K pattern test failure
0A	Base 64K parity circuitry failure
0A	Base 64K parity error
0A	Base 64K data bus failure
0A	Base 64K address bus failure
0A	Base 64K block access read failure
0A	Base 64K block access write failure
0B	Master 8259 failure
0B	Slave 8259 failure
0C	Master 8259 interrupt address failure
0C	Slave 8259 interrupt address failure
0C	8259 interrupt address error
0C	Master 8259 stuck interrupt error
0C	Slave 8259 stuck interrupt error
0C	System timer 8254 channel 0/IRQ 0 failure
0D	8254 channel 0, speaker detect, failure
0E	8254 channel 2 speaker failure
0E	8254 OUT2, speaker detect, failure
0F	CMOS RAM read/write test failure
0F	CMOS read/write test failure
0F	RTC periodic interrupt / IRQ 8 failure
10	Video ROM checksum failure
11	RTC battery discharged or CMOS contents corrupt
12	Keyboard controller failure
12	Keyboard error, stuck key
14	Memory parity error
14	I/O channel error
14	RAM pattern test failed
15	Keyboard failure or no keyboard present
17	A20 test failure caused by 8042 timeout
17	A20 gate stuck in disabled state
17	A20 gate stuck in asserted state
18	Parity circuit failure
19	Data bus test failure, address line test failed, block access read failure, block access read/write failure, or banks decode to same location
1A	Real time clock is not updating
1A	Real time clock settings are invalid
1E	Diskette CMOS configuration invalid, diskette controller failure, or diskette drive A: failure or diskette drive B: failure
1F	FDD CMOS configuration invalid, fixed disk C: failure, or fixed disk D: failure
20	Fixed disk configuration change, diskette configuration change, serial port configuration change, parallel port configuration change, video configuration change, memory configuration change, or coprocessor configuration change
21	System key is in locked position
29	Adapter ROM checksum failure

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Mr. BIOS (Microid) v3.4x

00	Cold start
01	Initialize KBD controller, Disable CPU cache, Initialize onboard I/O chipset, Test RAM size
02	Disable critical I/O
03	Checksum the BIOS ROM
04	Test page register
05	Enable A20 gate, issue 8042 keyboard controller self test
06	Initialize ISA I/O
07	Warm initialize KBD controller & I/O chipset
08	Refresh toggle test
09	Test DMA master & slave registers
0A	Test first 64KB of base memory
0B	Test master 8259 mask, test slave 8259 mask
0C	Test 8259 slave, initialize interrupt vectors 00-77h, initialize keyboard buffer variables
0D	Test timer 0, 8254 channel 0
0E	Test 8254 channel 2, speaker channel
10	Turn on monitor, show error messages
11	Read and checksum the CMOS
12	Call video ROM initialization routines
13	Set 8Mhz AT-bus
14	Size and test memory, stuck NMI check
15	No keyboard and power on, retry keyboard initialization
16	Size and test CPU cache
17	Test A20 off and on gates
18	External memory size, stuck NMI check
19	System memory size, stuck NMI check
1A	Test RTC time
1B	Determine serial ports
1C	Determine parallel ports
1D	Initialize numeric coprocessor
1E	Determine floppy diskette drive controllers
1F	Determine IDE controllers
20	Display CMOS configuration changes
21	Clear screens
22	Set/reset numlock LED, security functions
23	Final onboard serial and parallel ports check
24	Set keyboard typematic rate
25	Initialize floppy controller
26	Initialize ATA discs
27	Set video mode for primary adapter`
28	Cyrix WB-CPU support, purge 8259 slave
29	Reset A20 to OFF, Install adapter ROM's
2A	Clear primary screen, convert RTC to system ticks, set final DOS timer variable
2B	Enable NMI and latch
2E	Fast A20, fix A20
2F	Purge 8259 slave, control to interrupt 19 boot
32	Test CPU burst
34	Determine 8042, set warm boot flag STS 2
35	Test high memory area wrap, verify A20 via F000:10 high memory area
37	CPU step NZ, CPUID, disable CPU features
38	Set 8042 pins
39	PCI bus
3A	Scan PCI bus
3B	Initialize PCI bus with intermediate defaults
3C	Initialize PCI OEM: OEM bridge
3D	PCI bus and Plug & Play: initialize AT slotman from AT bus CDE usage

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3E	Find phantom CDE ROM PCI cards
3F	PCI bus: final fast back-to-back state
40	OEM post initialization, hook audio
41	Allocate I/O on PCI bus, logs in PCI-IDE
42	Hook PCI-ATA chips
43	Allocate IRQ's to PCI bus, enable ATA IRQ's
44	Allocate and enable PCI memory/ROM space
45	Determine PS/2 mouse
46	Map IRQ's to PCI bus, enable ATA IRQ's
47	PCI-ROM install, note user CMOS
48	If setup conditions: execute setup utility
49	Test F000, transfer EPROM to shadow RAM
4A	Hook VLATA chip
4B	Identify and spin up all drives
4C	Detect secondary IRQ, if VL/AT bus IDE exists but it's IRQ not known yet
4D	Detect /log 32-bit I/O ATA devices
4E	Atapi drive M/S bitmap to shadow RAM, set interrupt 13 vector
4F	Finalize shadow RAM
50	Chain interrupt 13
51	Load Plug & Play, processor vector initialized, BIOS vector initialized, OEM vector initialized
52	Scan for Plug & Play, update Plug & Play device count
53	Supplement IRQ usage, AT IRQ's
54	Conditionally assign everything Plug & Play wants
58	OEM custom boot sequence just prior to interrupt 19 boot
59	Pass control to interrupt 19 boot
5A	Display MR BIOS logo
88	Dead motherboard and/or BIOS ROM
FF	BIOS POST finished

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NCR AT BIOS

01	Test the CPU registers
02	Test system support I/O
03	Test BIOS ROM checksum
04	Test DMA page registers
05	Test timer channel 1
06	Test timer channel 2
07	Test RAM refresh logic
08	Test base 64KB
09	Test 8/16 bit bus conversion
0A	Test interrupt controller 1
0B	Test interrupt controller 2
0C	Test I/O controller
0D	Test CMOS RAM read/write operation
0E	Test battery power
0F	Test CMOS RAM checksum
10	Test CPU protected mode
11	Test video configuration
12	Test primary video controller
13	Test secondary video controller
20	Display results of tests to this point
21	Test DMA controller 1
22	Test DMA controller 2
23	Test system timer channel 0
24	Initialize interrupt controllers
25	Test interrupts
26	Test interrupts
30	Check base 640KB memory
31	Check extended memory size
32	Test higher 8 address lines
33	Test base memory
34	Test extended memory
40	Test keyboard
41	Test keyboard
42	Test keyboard
43	Test keyboard
44	Test A20 gate
50	Setup hardware interrupt vectors
51	Enable interrupt timer channel 0
52	Check BIOS ROM
60	Test floppy disk controller and drive
61	Test hard disk controller
62	Initialize floppy drives
63	Initialize hard drives
70	Test real time clock
71	Set time of day in RTC
72	Check parallel interface ports
73	Check serial interface ports
74	Check for any option ROM's
75	Check math coprocessor
76	Enable keyboard and RTC interrupts
F0	System not configured properly or hardware defect
F1	Scan and execute any option ROM's
F2	Call interrupt 19 boot loader

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NCR PC916 BIOS

01	Test CPU registers
03	Test BIOS ROM checksum
04	Test DMA page registers
05	Test timer channel 1
06	Test timer channel 2
0C	Test 8042 keyboard controller
14	Test disabling speed stretch at port 69h
15	Start refresh timer 1
16	Enable speed stretch at port 69h
17	Clear write protect bit
1B	Test 64KB shadow RAM
18	Write and test interrupt descriptor table
19	Verify RAM
02	Verify port 61h
07	Test refresh logic
08	Test base 64KB RAM
09	Test 8/16 bit bus conversion logic
0A	Test interrupt mask register A
0B	Test interrupt mask register B
1A	Check 8042 keyboard controller
0D	Test CMOS RAM shutdown byte
0E	Test CMOS RAM battery power
0F	Test CMOS RAM checksum
10	Test CPU protected mode
11	Test video configuration
12	Initialize and test primary video controller
13	Primary video error
20	Display results of tests to this point
21	Test DMA controller 1
22	Test DMA controller 2
23	Test timer 1 counter 0 840nS clock timer
27	Test timer 2 counter 0 for NMI
28	Test timer 2 counter
24	Initialize both interrupt controllers
25	Check for unexpected interrupts
26	Wait for interrupt
30	Check base 640KB memory
31	Check extended memory size
32	Test higher 8 address lines
33	Test base memory
34	Test extended memory up to 256MB
35	Test RAM in segment E000h
40	Test keyboard enable/disable
41	Test keyboard reset command
42	Test keyboard
43	Test keyboard
F4	Display speed setting
45	Initialize the mouse and enable IRQ 1
44	Test address overrun capability
50	Set up hardware interrupt vectors
51	Enable IRQ 0 interval interrupt from timer 0
60	Test for floppy and hard disk controllers and drives
61	Test disk controller
62	Initialize floppy drives
63	Initialize hard drives
74	Check and execute option ROM's from C8000h to DFFFFh
70	Test RTC

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71	Set interval timer
72	Configure and test parallel interface
73	Configure and test serial interface
75	Test math coprocessor if installed
76	Enable keyboard and RTC
F0	Display and logged errors
F6	Test base memory
F3	Got to setup if F1 was pressed
F4	Display speed setting
F5	Initialize counter 2 for speed testing
F1	Test system code at E0000h and copy video ROM to shadow memory
F2	Call interrupt 19 boot loader
F6	Test base memory
F7	Test extended memory

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Olivetti 1076/AT&T BIOS

PASS	FAIL	DESCRIPTION
41	7F	CPU flag and register test
42	7E	Check and verify CMOS shutdown code
43	7D	BIOS ROM checksum test
44	7C	Test the 8253 timer
45	7B	Start memory refresh
46	7A	Test the 8041 keyboard controller
47	79	Test the first 8KB of RAM
48	78	Test protected mode operation
49	77	Test CMOS RAM shutdown byte
4A	76	Test protected mod operation
4B	75	Test RAM from 8KB to 640KB
4C	74	Test all RAM above 1MB
4D	73	Test NMI
4E	72	Test RAM parity system
50	71	Test 8259 PIC 1
51	6F	test 8259 PIC 2
52	6E	Test DMA page register
53	6D	Test 8237 DMA controller 1
54	6C	Test 8237 DMA controller 2
55	6B	Test PIO port 61h
56	6A	Test the keyboard controller
57	69	Test the CMOS clock/calendar IC
59	68	Test the CPU protected mode
5A	66	Test CMOS RAM battery
5B	65	Test CMOS RAM
5C	64	Verify CMOS RAM checksum
5D	63	Test parallel port configuration
5E	62	Test serial port configuration
5F	61	Test memory configuration below 640KB
60	60	Test memory configuration above 1MB
61	5F	Detect and test math coprocessor
62	5E	Test configuration of game port adapter
62	5D	Test key lock switch
63	5D	Test hard drive configuration
64	5C	Configure floppy drives
66	5B	Test option ROM's
-	-	Call interrupt 19 boot loader

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Olivetti PS/2 BIOS

01	Test CPU
02	Check CMOS shutdown byte
03	Initialize the PIC
04	Test refresh
05	Test CMOS/RTC periodic interrupt
06	Test timer ratio
07	Test first 64KB of RAM
08	Test 8042 keyboard controller
09	Test NMI
0A	Test 8254 PIT
0B	Test port 94h
0C	Test port 103h
0D	Test port 102h
0E	Test port 96h
0F	Test port 107h
10	Blank the display
11	Check the keyboard
12	Test CMOS RAM battery
13	Verify CMOS RAM checksum
14	Verify extended CMOS RAM checksum
15	Initialize system board and adapter
16	Initialize and test RAM
17	Test protected mode registers
18	Test CMOS RAM shutdown byte
19	Test CMOS protected mode
1A	Initialize video adapter ROM scan
1B	Test BIOS ROM checksum
1C	Test PIC #1
1D	Test PIC #2
1E	Initialize interrupt vectors
1F	Test CMOS RAM
20	Test extended CMOS RAM
21	Test CMOS real-time clock
22	Test clock calendar
23	Dummy checkpoint
24	Test watchdog timer
25	Test 64KB to 640KB RAM
26	Configure lower 640KB RAM
27	Test extended memory
28	Initialize extended BIOS data segment and log POST error
29	Configure memory above 1MB
2A	Dummy checkpoint
2B	Test RAM parity
2C	Test DMA page registers
2D	Test DMA controller registers
2E	Test DMA transfer-count register
2F	Initialize DMA controller
30	Test PIO 61
31	Test the keyboard
32	Initialize keyboard typematic rate and delay
33	Test auxiliary device
34	Test advanced protected mode
35	Configure parallel ports
36	Configure 8250 serial ports
37	Test and configure math co-processor
38	Test and configure game-port adapter
39	Configure and initialize hard disk

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3A	Floppy-disk configuration
3B	Initialize ROM drivers
3C	Display total memory and hard drives
3D	Final initialization
3E	Detect and initialize parallel ports
3F	Initialize hard drive and controller
40	Initialize math co-processor
42	Initialize adapter ROM scan
CC	Unexpected processor excerption occurred
DD	Save DDNIL status
EE	NMI handler shutdown
FF	Call interrupt 19 boot loader

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Phillips BIOS

0A	DMA page-register R/W bad
10	CMOS RAM R/W error
11	System BIOS ROM checksum error
12	Timer A error
13	DMA controller A error
14	DMA controller B error
15	Memory refresh error
16	Keyboard controller error
17	Keyboard controller error
19	Keyboard controller error
1C	Base 64KB RAM error
1D	Base 64KB RAM parity error
1F	LSI sync missing
21	PVAM register error
25	System options error
2B	Video sync error
2C	Video BIOS ROM error
2D	Monochrome/color configuration error
2E	No video memory detected
35	Interrupt controller error
36	Byte swapper error
37	NMI error
38	Timer interrupt fault
39	LSI timer halted
3A	Main memory test error
3B	Keyboard error
3C	Keyboard interrupt error
3D	DDNIL scan halted and cache disabled
40	Diskette error
48	Adapter card error
4C	CMOS battery/checksum error
4D	System options error
52	Keyboard controller error
6A	Failure shadowing BIOS ROM
70	Memory size configuration error

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Phoenix BIOS Plus / v1.0 BIOS

01	CPU register test in progress
02	CMOS read/write failure
03	ROM BIOS checksum failure
04	Programmable interval timer failure
05	DMA initialization failure
06	DMA page register read/write failure
08	RAM refresh verification failure
09	First 64K RAM test in progress
0A	First 64K RAM chip or data line failure multi-bit
0B	First 64K RAM odd/even parity logic failure
0C	Address line failure in first 64K RAM
0D	Parity failure in first 64K RAM
10	Bit 0 first 64K RAM failure
11	Bit 1 first 64K RAM failure
12	Bit 2 first 64K RAM failure
13	Bit 3 first 64K RAM failure
14	Bit 4 first 64K RAM failure
15	Bit 5 first 64K RAM failure
16	Bit 6 first 64K RAM failure
17	Bit 7 first 64K RAM failure
18	Bit 8 first 64K RAM failure
19	Bit 9 first 64K RAM failure
1A	Bit a(10) first 64K RAM failure
1B	Bit B(11) first 64K RAM failure
1C	Bit C(12) first 64K RAM failure
1D	Bit D(13) first 64K RAM failure
1E	Bit E(14) first 64K RAM failure
1F	Bit F(15) first 64K RAM failure
20	Slave DMA register failure
21	Master DMA register failure
22	Master interrupt mask register failure
23	Slave interrupt mask register failure
25	Interrupt vector loading in progress
27	8042 keyboard controller test failure
28	CMOS power failure/checksum calculation in progress
29	CMOS configuration validation in progress
2B	Screen memory test failure
2C	Screen initialization failure
2D	Screen retrace test failure
2E	Search for video ROM in progress
30	Screen believed running with video ROM
31	Mono monitor believed operational
32	Color monitor (40 columns) believed operational
33	Color monitor (80 columns) believed operational
34	Timer tick interrupt in progress or failed (non-fatal)
35	Shutdown failure (non-fatal)
36	Gate A20 failure (non-fatal)
37	Unexpected interrupt in protected mode (non-fatal)
38	Memory high address line failure at 01000-0A000 (non-fatal)
39	Memory high address line failure at 100000-FFFFFF (non-fatal)
3A	Timer chip counter 2 failed (non-fatal)
3B	Time of day clock stopped
3C	Serial port test
3D	Parallel port test
41	System board select bad
42	Extended CMOS RAM bad

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Phoenix UMC Chipsatz PCI BIOS

02	Verify real mode operation
04	Get CPU type
06	Initialize system hardware
08	Initialize chipset registers with initial POST values
09	Set in POST flag
0A	Initialize CPU registers
0C	Initialize cache to initial POST values
0E	Initialize I/O
10	Initialize power management
11	Load alternate registers with initial POST values
12	Jump to user patch 0
14	Initialize keyboard controller
16	BIOS ROM checksum
18	8254 programmable interrupt timer initialization
1A	8237 DMA controller initialization
1C	Reset 8259 programmable interrupt controller
20	Test DRAM refresh
22	Test 8742 keyboard controller
24	Set ES segment register to 4GB
26	Enable address line A20
28	Autosize DRAM
2A	Clear 512K base memory
2C	Test 512K base address lines
2E	Test 512K base memory
30	Test base address memory
32	Test CPU bus clock frequency
34	Test CMOS RAM
35	Test chipset register initialize
36	Test check resume
37	Reinitialize the chipset
38	Shadow system BIOS ROM
39	Reinitialize the cache
3A	Autosize the cache
3C	Configure advanced chipset registers
3D	Load alternate registers with CMOS values
3E	Read hardware configuration from keyboard controller
40	Set initial CPU speed
42	Initialize interrupt vectors
44	Initialize BIOS interrupts
46	Check ROM copyright notice
47	Initialize manager for PCI options ROM's
48	Check video configuration against CMOS
49	Initialize PCI bus and devices
4A	Initialize all video adapters
4C	Shadow video BIOS ROM
4E	Display copyright notice
50	Display CPU type and speed
52	Test keyboard
54	Set key click if enabled
56	Enable keyboard
58	Test for unexpected interrupts
5A	Display prompt "Press F2 to Enter Setup"
5C	Test RAM between 512K and 640K
5E	Test base memory
60	Test expanded memory
62	Test extended memory address lines
64	Jump to user patch 1

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66	Configure advanced cache registers
68	Enable external and CPU registers
69	Set up power management
6A	Display external cache size
6C	Display shadow message
6E	Display non-disposable segments
70	Display error messages
72	Check for configuration messages
74	Test real time clock
76	Check for keyboard errors
7A	Enable keylock
7C	Setup hardware interrupt vectors
7E	Test coprocessor if present
80	Disable onboard I/O ports
82	Detect and install external RS232 ports
84	Detect and install external parallel ports
86	Reinitialize onboard I/O ports
88	Initialize BIOS data areas
8A	Initialize extended BIOS data area
8C	Initialize floppy drive controller
8E	Hard disk autotype configuration
90	Initialize hard disk controller
91	Initialize local bus hard disk controller
92	Jump to user patch 2
94	Disable A20 address lines
96	Clear huge ES segment register
98	Search for option ROM's
9A	Shadow options ROM's
9C	Setup power management
9E	Enable hardware interrupts
A0	Set time of day
A2	Check key lock
A4	Initialize typematic rate
A8	Erase F2 prompt
AA	Scan for F2 keystroke
AC	Enter setup
AE	Clear in-POST flag
B0	Check for errors
B2	POST done
B4	One beep
B6	Check password (optional)
B8	Clear global descriptor table
BC	Clear parity checkers
BE	Clear screen (optional)
C0	Try to boot with interrupt 19
D0	Interrupt handler error
D2	Unknown interrupt error
D4	Pending interrupt error
D6	Initialize option ROM error
D8	Shutdown error
DA	Extended block move
DC	Shutdown 10 error

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Phoenix PCI BIOS

02	If the CPU is in protected mode, turn on gate A20 and pulse the reset line. Forces a shutdown 0.
04	On cold boot, save the CPU type information value in the CMOS
06	Reset DMA controllers; Disable video; Clear pending interrupts from real time clock; Setup port B register
08	Initialize chipset control registers to power on defaults
0A	Set a bit in the CMOS that indicates POST; used to determine if the current configuration causes the BIOS to hang. If true, default BIOS values set on next POST
0C	Initialize I/O module control registers
0E	External CPU caches initialized; Cache registers set to default values
10/12/14	Verify response from 8742 keyboard controller
16	Verify BIOS ROM checksums to zero
18	Initialize all three 8254 programmable interrupt timers
1A	Initialize DMA command register; Initialize 8 DMA channels
1C	Initialize 8259 programmable interrupt controller; ICW4 needed; Cascade and edge triggered mode
20	Test DRAM refresh by polling refresh bit in post B
22	Test 8742 keyboard controller; Self test send to keyboard controller and awaiting results; Read the switch inputs from the 8742 keyboard controller and write the keyboard controller command byte
24	Set ES segment register to 4GB
26	Enable address line A20
28	Autosize DRAM
2A	Clear first 64K of RAM
2C	Test RAM address lines
2E	Test first 64K bank of memory by checking chip address line test and RAM test
30/32	Find true CPU speed (MHz)
34	Clear CMOS diagnostic byte (register E); Check real time clock and verify battery; Checksum the CMOS and verify for corruption
36/38/3A	External cache is autosized and its configuration for enabling later in POST
3C	Configure advanced cache features; Configure external cache's configurable parameters
3E	Read hardware configuration from keyboard controller
40	Set system power-on speed to the rate determined by the CMOS; If the CMOS is invalid, use a lower speed
42	Initialize interrupt vectors 0-77h to the BIOS general interrupt handler
44	Initialize interrupt vectors 0-20h to proper values from the BIOS interrupt tables
46	Check copyright message checksum
48	Check video configuration
4A	Initialize both monochrome and color graphics video adapters
4C/4E	Display copyright message
50	Display CPU type and speed
52	Test for the self-test code if a cold start; Keyboard performs a self-test and sends and AA if successful
54	Initialize keystroke clicker during POST
56	Enable keyboard
58	Test for unexpected interrupts; Check STI for hot interrupts; Test NMI for unexpected interrupts; Enable parity checkers and read from memory checking for unexpected interrupt
5A	Display prompt "Press F2 to Enter Setup"
5C	Determine and test the amount of memory available; Save total size to BIOS variable called bdaMemorySize
5E	Perform address of base memory
60	Determine and test the amount of extended memory available; Save the total size in the CMOS at CMOSExtended

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62	Perform and address line test on A0 to the amount of memory available
68	External and CPU caches, if present, are enabled
6A	Display cache size on screen if non-zero
6C	Display BIOS shadow status
6E	Display the starting offset of the non-disposable section of the BIOS
70	Check flags in CMOS and in the BIOS data area to see if any errors have been detected during the POST
72	Check status bits for configuration errors
74	Test real time clock if the battery has lost power
76	Check status bits for keyboard errors; Errors are displayed
78	Check for stuck keys on the keyboard; Errors are displayed
7A	Enable keylock
7C	Setup hardware interrupt vectors
7E	Test coprocessor if present
80/82	Detect and install RS232 ports
84	Detect and install parallel ports
86/88	Initialize timeouts/key buffer/soft reset flags
8A	Initialize extended BIOS data area and initialize the mouse
8C	Initialize the floppy disks and display error message if failure was detected
8E	Hard disk autotype detection
90	If the CMOS RAM is valid and intact and fixed disks are defined, call the fixed disk initialization routine to initialize the fixed disk system and take over the appropriate interrupt vectors
92/94	Disable gate A20 address line
96/98	Scan for ROM BIOS extensions
9E	Enable hardware interrupts
A0	Set time of day
A2	Setup numlock indicator
A4	Initialize typematic rate
A6	Initialize hard disk autoparking
A8	Erase F2 prompt
AA	Scan for F2 keystroke
AC	Check to see if SETUP should executed
AE	Clear ConfigFailedBit and InPostBit in CMOS
B0	Check for POST errors
B2	Set/clear status bits to reflect POST complete
B4	One beep
B6	Check for password before boot
B8	Clear global descriptor table
BA	Initialize the screen saver
BC	Clear parity error latch
BE	Clear screen
C0	Try to boot with interrupt 19
D0/D2	If an interrupt occurs before interrupts vectors have been initialized, interrupt handler will check if 8259 programmable interrupt timer caused the interrupt and which one; If error is unknown, InterruptFlag will be FF, otherwise, it will hold the IRQ number that occurred
D4	Clear pending timer and keyboard interrupts and transfer control to the double word address located at RomCheck
D6/D8/DA	Return from extended block move

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Phoenix ISA/EISA/MCA v3.07 BIOS

01	CPU register test in progress
02	CMOS read/write failure
03	ROM BIOS checksum failure
04	Programmable interval timer failure
05	DMA initialization failure
06	DMA page register write/read failure
08	RAM refresh verification failure
09	First 64K RAM test in progress
0A	First 64K RAM chip or data line failure multi-bit
0B	First 64K RAM odd/even logic failure
0C	Address line failure in first 64K RAM
0D	Parity failure in first 64K RAM
0E	Fail-safe timer failure
0F	Software NMI post failure
10	Bit 0 first 64K RAM failure
11	Bit 1 first 64K RAM failure
12	Bit 2 first 64K RAM failure
13	Bit 3 first 64K RAM failure
14	Bit 4 first 64K RAM failure
15	Bit 5 first 64K RAM failure
16	Bit 6 first 64K RAM failure
17	Bit 7 first 64K RAM failure
18	Bit 8 first 64K RAM failure
19	Bit 9 first 64K RAM failure
1A	Bit A first 64K RAM failure
1B	Bit B first 64K RAM failure
1C	Bit C first 64K RAM failure
1D	Bit D first 64K RAM failure
1E	Bit E first 64K RAM failure
1F	Bit F first 64K RAM failure
20	Slave DMA register failure
21	Master DMA register failure
22	Master interrupt mask register failure
23	Slave interrupt mask register failure
25	Interrupt vector loading in progress
27	Keyboard controller test failure
28	CMOS power failure; checksum calculation in progress
29	CMOS RAM configuration validation in progress
2B	Screen memory test failure
2C	Screen initialization failure
2D	Screen retrace test failure
2E	Search for video ROM in progress
30	Screen believed running with video ROM
31	Mono monitor believed operational
32	Color monitor (40 columns) believed operational
33	Color monitor (80 columns) believed operational
34	No time tick
35	Shutdown test in progress or failure
36	Gate A20 failure
37	Unexpected interrupt in protected mode
38	Memory high address line failure at 01000-0A000; RAM test in progress or address failure >FFFh
39	Memory high address line failure at 100000-FFFFFF
3A	Interval timer channel 2 test or failure
3B	Time of day clock test or failure
3C	Serial port test or failure
3D	Parallel port test or failure

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3E	Math coprocessor test
3F	Cache test (Dell)
41	System board select bad (Micro Channel only)
42	Extended CMOS RAM bad (Micro Channel only)

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Phoenix 4.0 BIOS

02	Verify real mode
04	Get CPU type
06	Initialize system hardware
08	Initialize chipset registers with initial POST values
09	Set in POST flag
0A	Initialize CPU registers
0C	Initialize cache to initial POST values
0E	Initialize I/O
10	Initialize power management
11	Load alternate registers with initial POST values
12	Jump to UserPatch0
14	Initialize keyboard controller
16	BIOS ROM checksum
18	8254 programmable interrupt timer initialization
1A	8237 DMA controller initialization
1C	Reset 8254 programmable interrupt timer
20	Test DRAM refresh
22	Test 8742 keyboard controller
24	Set ES segment register to 4GB
28	Autosize DRAM
2A	Clear 512K base RAM
2C	Test 512K base address lines
2E	Test 512K base memory
32	Test CPU bus-clock frequency
37	Reinitialize the chipset
38	Shadow system BIOS ROM
39	Reinitialize the cache
3A	Autosize cache
3C	Configure advanced chipset registers
3D	Load alternate registers with CMOS values
40	Set initial CPU speed
42	Initialize interrupt vectors
44	Initialize BIOS interrupts
46	Check ROM copyright notice
48	Check video configuration against CMOS
49	Initialize PCI bus and devices
4A	Initialize all video adapters in system
4C	Shadow video BIOS ROM
4E	Display copyright notice
50	Display CPU type and speed
52	Test keyboard
54	Set key click if enabled
56	Enable keyboard
58	Test for unexpected interrupts
5A	Display prompt "Press F2 to Enter Setup"
5C	Test RAM between 512K and 640K
60	Test expanded memory
62	Test extended memory address lines
64	Jump to UserPatch1
66	Configure advanced cache registers
68	Enable external and CPU caches
6A	Display external cache size
6C	Display shadow message
6E	Display non-disposable segments
70	Display error messages
72	Check for configuration errors
74	Test real time clock

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76	Check for keyboard errors
7C	Setup hardware interrupts vectors
7E	Test coprocessor if present
80	Disable onboard I/O ports
82	Detect and install external RS232 ports
84	Detect and install external parallel ports
86	Re-initialize on-board I/O ports
88	Initialize BIOS data area
8A	Initialize extended BIOS data area
8C	Initialize floppy controller
90	Initialize hard disk controller
91	Initialize local bus hard disk controller
92	Jump to UserPatch2
94	Disable A20 address line
96	Clear huge ES segment register
98	Search for option ROM's
9A	Shadow option ROM's
9C	Setup power management
9E	Enable hardware interrupts
A0	Set time of day
A2	Check key lock
A8	Erase F2 prompt
AA	Scan for F2 keystroke
AC	Enter setup
AE	Clear in-POST flag
B0	Check for errors
B2	POST done; prepare to boot operating system
B4	One beep
B6	Check password (optional)
B8	clear global descriptor table
BC	Clear parity checkers
BE	Clear screen (optional)
BF	Check virus and backup reminders
C0	Try to boot interrupt 19
D0	Interrupt handler error
D2	Unknown interrupt error
D4	Pending interrupt error
D6	Initialize option ROM error
D8	Shutdown error
DA	Extended block move
DC	Shutdown 10 error
E2	Initialize the chipset
E3	Initialize refresh counter
E4	Check for forced flash
E5	Check HW status of ROM
E6	BIOS ROM is ok
E7	Do a complete RAM test
E8	Do OEM initialization
E9	Initialize interrupt controller
EA	Read in bootstrap code
EB	Initialize all vectors
EC	Boot the flash program
ED	Initialize the boot device
EE	Boot code was read ok

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Phoenix 4.0 (Release 6) BIOS

02	Verify real mode
03	Disable non-maskable interrupt (NMI)
04	Get CPU type
06	Initialize system hardware
07	Disable shadow and execute code from the ROM
08	Initialize chipset with initial POST values
09	Set IN POST flag
0A	Initialize CPU registers
0B	Enable CPU cache
0C	Initialize caches to initial POST values
0E	Initialize I/O component
0F	Initialize the local bus IDE
10	initialize power management
11	Load alternate registers with initial POST values
12	Restore CPU control word during warm boot
13	Initialize PCI bus mastering devices
14	Initialize keyboard controller
16	BIOS ROM checksum
17	Initialize cache before memory autosize
18	8254 programmable interrupt timer initialization
1A	8237 DMA controller initialization
1C	Reset programmable interrupt controller
20	Test DRAM refresh
22	Test 8742 keyboard controller
24	Set ES segment register to 4GB
26	Enable gate A20 line
28	Autosize DRAM
29	Initialize POST memory manager
2A	Clear 512KB base RAM
2C	RAM failure on address line xxxx
2E	RAM failure on data bits xxxx of low byte of memory bus
2F	Enable cache before system BIOS shadow
30	RAM failure on data bits xxxx of high byte of memory bus
32	Test CPU bus clock frequency
33	Initialize Phoenix Dispatch Manager
36	Warm start shut down
38	Shadow system BIOS ROM
3A	Autosize cache
3C	Advanced configuration of chipset registers
3D	Load alternate registers with CMOS values
41	Initialize extended memory for RomPilot
42	Initialize interrupt vectors
45	POST device initialization
46	Check ROM copyright notice
47	Initialize I20 support
48	Check video configuration against CMOS
49	Initialize PCI bus and devices
4A	Initialize all video adapters in system
4B	QuietBoot start (optional)
4C	Shadow video BIOS ROM
4E	Display BIOS copyright notice
4F	Initialize MultiBoot
50	Display CPU type and speed
51	Initialize EISA board
52	Test keyboard
54	Set key click if enabled
55	Enable USB devices

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58	Test for unexpected interrupts
59	Initialize POST display service
5A	Display prompt "Press F2 to enter SETUP"
5B	Disable CPU cache
5C	Test RAM between 512KB and 640KB
60	Test extended memory
62	Test extended memory address lines
64	Jump to UserPatch1
66	Configure advanced cache registers
67	Initialize Multi Processor APIC
68	Enable external and CPU caches
69	Setup system management mode (SMM) area
6A	Display external L2 cache size
6B	Load custom defaults (optional)
6C	Display shadow area message
6E	Display possible high address for UMB recovery
70	Display error messages
72	Check for configuration errors
76	Check for keyboard errors
7C	Set up hardware interrupt vectors
7D	Initialize Intelligent System Monitoring
7E	Initialize coprocessor if present
80	Disable onboard super I/O ports and IRQ's
81	Late POST device initialization
82	Detect and install external RS232 ports
83	Configure non-MCD IDE controllers
84	Detect and install external parallel ports
85	Initialize PC compatible PnP ISA devices
86	Reinitialize onboard I/O ports
87	Configure motherboard configurable devices (optional)
88	Initialize BIOS data area
89	Enable non-maskable interrupts (NMI's)
8A	Initialize extended BIOS data area
8B	Test and initialize PS/2 mouse
8C	Initialize floppy controller
8F	Determine number of ATA drives (optional)
90	Initialize hard disk controllers
91	Initialize local bus hard disk controllers
92	Jump to UserPatch2
93	Build MPTABLE for multi processor boards
95	Install CD ROM for boot
96	Clear huge ES segment register
97	Fixup multi processor table
98	Search for option ROM's
99	Check for SMART drive (optional)
9A	Shadow option ROM's
9C	Set up power management
9D	Initialize security engine (optional)
9E	Enable hardware interrupts
9F	Determine number of ATA and SCSI drives
A0	Set time of day
A2	Check key lock
A4	Initialize typematic rate
A8	Erase F2 prompt
AA	Scan for F2 key stroke
AC	Enter setup
AE	Clear boot flag
B0	Check for errors
B1	Inform RomPilot about the end of POST

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B2	POST done - prepare to boot operating system
B4	One short beep
B5	Terminate QuietBoot (optional)
B6	Check password
B7	Initialize ACPI BIOS
B9	Prepare boot
BA	Initialize DMI parameters
BB	Initialize PnP option ROM's
BC	Clear parity checkers
BD	Display multiboot menu
BE	Clear screen
BF	Check virus and backup reminders
C0	Try to boot with interrupt 19
C1	Initialize POST Error Manager (PEM)
C2	Initialize error logging
C3	Initialize error display function
C4	Initialize system error handler
C5	PnP dual CMOS (optional)
C6	Initialize notebook docking (optional)
C7	Initialize notebook docking late
C8	Force check (optional)
C9	Extended checksum (optional)
CA	Redirect Int 15h to enable remote keyboard
CB	Redirect Int 13 to Memory Technologies Devices such as ROM, RAM, PCMCIA, and serial disk
CC	Redirect Int 10h to enable remote serial video
CD	Re-map I/O and memory for PCMCIA
CE	Initialize digitizer and dispaly message
D2	Unknown interrupt
	The following are for boot block in Flash ROM
E0	Initialize the chipset
E1	Initialize the bridge
E2	Initialize the CPU
E3	Initialize the system timer
E4	Initialize system I/O
E5	Check force recovery boot
E6	Checksum BIOS ROM
E7	Go to BIOS
E8	Set Huge Segment
E9	Initialize Multi Processor
EA	Initialize OEM special code
EB	initialize PIC and DMA
EC	Initialize Memory type
ED	Initialize Memory size
EE	Shadow Boot Block
EF	System memory test
F0	Initialize interrupt vectors
F1	Initialize Run Time Clock
F2	Initialize video
F3	Initialize System Management Menager
F4	Output one beep
F5	Clear Huge Segement
F6	Boot to mini DOS
F7	Boot to Full DOS

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Quadtel v 3.07 AT BIOS

02	Flag test
04	Register test
06	System hardware initialization
08	Initialize chipset registers
0A	BIOS ROM checksum
0C	DMA page register test
0E	8254 programmable interrupt timer test
10	8254 programmable interrupt timer initialization
12	8237 DMA controller test
14	8237 DMA controller initialization
16	Initialize 8259 programmable interrupt controller; reset math coprocessor
18	8259 programmable interrupt controller test
1A	Memory refresh test
1C	Base 64K RAM address test
1E	Base 64K RAM memory test
20	Base 64K RAM test for 386 based systems
22	8742 keyboard controller self test
24	MC 146818 CMOS test
26	Start first protected mode test
28	Memory sizing test
2A	Autosize memory chips
2C	Chip interleave enable test
2E	First protected mode test exit
30	Unexpected shutdown
32	System board memory size
34	Relocate shadow RAM if configured
36	Configure EMS system
38	Configure wait states
3A	Retest 64K RAM base memory
3C	CPU speed calculation
3E	Get switches from 8042 keyboard controller
40	Configure CPU speed
42	Initialize interrupt vectors
44	Verify video configuration
46	Initialize video system
48	Test unexpected interrupts
4A	Start second protected mode test
4C	Verify LDT protected mode instruction
4E	Verify TR protected mode instruction
50	Verify LSL protected mode instruction
52	Verify LAR protected mode instruction
54	Verify VERR protected mode instruction
56	Unexpected exception
58	Address line A20 test
5A	Keyboard ready test
5C	Determine AT or XT keyboard
5E	Start third protected mode test
60	Base memory test
62	Base memory address test
64	Shadow memory test
66	Extended memory test
68	Extended address test
6A	Determine memory size
6C	Display error messages
6E	Copy BIOS to shadow memory
70	8254 programmable interrupt timer clock test
72	MC 146818 real time clock test

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74	Keyboard stuck key test
76	Initialize hardware interrupt vectors
78	Math coprocessor test
7A	Determine serial ports available
7C	Determine parallel ports available
7E	Initialize BIOS data area
80	Determine floppy and hard disk controller
82	Floppy disk test
84	Hard disk test
86	External ROM scan
88	System key lock test
8A	Wait for <F1> key pressed
8C	Final system initialization
8E	Interrupt 19 boot loader
B0	Unexpected interrupt before or after boot up

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Tandon Type B AT 1992 BIOS

01	Cold boot started
06	Initialize chipset if any
07	Warm boot entry; Start of 8042 keyboard controller self test
08	Part of cold boot keyboard initialization passed
09	Keyboard self test passed; Test CMOS checksum
0A	Test CMOS RAM battery
0B	Save CMOS RAM battery condition in CMOS diagnostic/status register
0C	Finished saving CMOS RAM battery condition
0D	Test 8254 programmable interrupt timer; Disable RAM parity, I/O parity, DMA controllers and system speaker; Enable timer channel 2
0E	8254 programmable interrupt timer test failed, xx is the failing channel number
0F	Initialize 8254 programmable interrupt timer channels; Conduct memory refresh test
10	Refresh test failed
11	Test base 64K RAM and fill with zeros
12	64K RAM test failed - 3 long beeps and system halt
13	64K RAM test passed
14	Set up stack; Disable mappers for systems that support EMS drivers; Initialize battery beep flag parameters for notebook; Perform read/write test of CMOS RAM; Enable error message if failed
15	CMOS RAM read/write test complete
16	Calculating CPU speed; May set to low if CMOS RAM failed
18	Test and initialize both 8259 programmable interrupt controllers
1A	8259 programmable interrupt controllers initialization complete
1B	Install interrupt handler and vector for interrupt 0F to check for unexpected interrupts; Halt is unexpected interrupt occurs
1C	Unexpected interrupt did not occur; Test 8254 programmable interrupt timer channel 0, IRQ 0 and software interrupt 8 tests
1D	Error; Timer 0 interrupt did not occur when expected, system is halted
1E	Both 8259 programmable interrupt controllers passed the tests
20	Set up interrupt vectors 02-1F
21	Set up interrupt vectors 70-77
22	Clear interrupt vectors for 41 and 46
23	Read 8042 keyboard controller self test result; DMA page register channel 2
24	Test for proper 8042 keyboard controller self test result
25	Error; Keyboard controller self test failed; System id halted with message displayed
26	Keyboard controller self test passed
27	Confirm DMA working; Prepare DMA channel 2 for floppy data transfer
28	Reinitialize video
29	Reinitialize video with cursor off
2A	Video parameters are initialized
2B	Enable NMI and I/O channel check; Disable 8254 programmable interrupt timer channel 2 and speaker
2C	Run RAM test to determine size of RAM
2D	RAM sizing complete
2E	Send reset command to keyboard controller to initialize a keyboard scan cycle
2F	Keyboard has been initialized; Initialize CMOS real time clock
30	CMOS real time clock has been initialized; Initialize on board floppy if any
31	Install the hard disk controller
32	Disk controller has been initialized; Prepare DMA channel 2 for floppy transfers
33	Perform equipment check and initialize math coprocessor
34	Install the serial and parallel ports
35	Test CMOS RAM battery
36	Check for keystroke

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37	Enable 8254 programmable interrupt timer channel 0 for system tick; Enable keyboard and slave interrupt controller 8259 programmable interrupt controller 2
38	Timer tick, keyboard and 8259 programmable interrupt controller 2 have been initialized; Enable/disable cache through CMOS RAM
39	Enable keyboard interface and interrupts; Go to built in setup program as necessary; Shadow ROM's found
3A	Set up complete
3B	Test the hard disk and floppy disk
3C	Scan for and invoke the adapter ROM's in C800-E000
3D	Turn of gate A20; Restore vectors 3bh-3fh with temporary interrupt service routines
3E	Gate A20 turned on
3F	Call interrupt 19 boot loader

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Tandon 486 EISA 1989 BIOS

01	Disable cache, enable ROM, high speed on, turn off cache's, disable EISA NMI's, set master/slave IRQ's to edge triggered, disable reset chaining; Disable 82C601 chip
05	Initialize address decoder, 640K RAM; Set BIOS as cacheable, enable extended memory
06	Clear shutdown flag
07	8042 keyboard controller test; Wait till 8042 buffer empty; Disable 8042 command, read 8042 output buffer; Set response ok to DMA page register channel 2
08	Send 8042 keyboard controller NOP command; Get 8042 self test result; Send DMA page register channel 2; If xx=55, then self test ok
09	Test BIOS ROM checksum
0A	Read CMOS registers 3 times to clear pending CMOS real time clock interrupts; Disable real time clock interrupts; Check battery
0B	Bad CMOS RAM battery
0C	Send command to port 61 to disable parity and speaker
0D	Test 8254programmable interrupt timer counter
0E	One of the counter timers is bad; xx indicates the bad counter
0F	Enable and check memory refresh
10	Memory refresh failed
11	Check and clear the first 64K RAM in real mode; Disable NMI; Clear parity latches; Fill 64K with 5555 and check it, then AAA and check it, then 0000
12	First 64K RAM memory test failed
13	First 64K RAM memory test passed
14	Reset the warm boot flag and test CMOS RAM; Turn off caches; Shadow the BIOS; set high speed; Calculate high speed and initialize GP flag; Set low speed and turn off cache if CMOS not good or CMOS speed not high
16	Check shutdown flag 123x
17	Reset was cold boot
18	Prepare 8259 programmable interrupt controllers
19	8259 programmable interrupt controllers initialization failed; Initialize video and display the error message
1A	Test 8259 programmable interrupt controller
1B	Set interrupt 0F to unexpected interrupt vector; Enable timer and interrupt
1C	Set interrupt 08 to timer 0 interrupt vector
1D	Timer interrupt did not occur; Initialize video and display error message
1E	Initialize interrupt vectors
1F	Initialize interrupt vectors 00-6F to temporary interrupt service routines
20	Set vectors for interrupt 02-1F
21	Set interrupt vectors for 70-77, clear vectors 60-67 and 78-FF
22	Clear interrupt vectors for 41 and 46
23	Read 8042 keyboard controller self test results from DMA page register channel 2
24	Test for proper 8042 keyboard controller self test result
25	8042 keyboard controller self test failed
26	Initialize 8042 keyboard controller
27	Check shutdown flag=123x; If no=cold boot
28	If cold boot or CMOS RAM is bad, then install video ROM and initialize video; Initialize equipment flags according to primary video adapter and CMOS RAM content; Initialize POST status
29	If not cold boot and CMOS RAM ok; Install video ROM and initialize video for mono/CGA; Initialize equipment flags according to primary video adapter and CMOS RAM contents
2A	Check for bad CMOS RAM
2B	Check shutdown flag=123x
2C	If cold boot; Turn off caches; Test memory for size and reinitialize cache status

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2D	Turn off "POST fail" CMOS RAM bit and display and error messages; Initialize keyboard RAM
2E	Initialize 8042 keyboard controller and test keyboard
2F	Initialize time of day in real time clock
30	Test for and install floppy drive controller
31	Enable 82C601 IDE interface; Test for and install hard disk
32	Test 8259 programmable interrupt controller DMA registers with 55 then AA, then initialize them to 00
33	Test for and initialize math coprocessor
34	Test for and initialize parallel and serial ports
35	Initialize RAM variables for bad CMOS time, date, checksum and battery
36	Wait for user to press Esc or Space; Check for keyboard lock; Clear keyboard lock override; Beep to indicate speed; Display error messages
37	Enable system clock tick (IRQ 0); Enable keyboard (IRQ 1); Enable slave interrupt controller (IRQ 2)
38	Initialize RAM variables for Ctrl-Alt_Esc
39	Enter setup is keystroke pressed
3A	Clear screen and update equipment flags according to CMOS RAM contents; Shadow ROM's; Enable/disable cache through CMOS RAM
3B	Initialize floppy and hard drives
3C	Set POST failed bit in CMOS RAM; Scan for and initialize adapter ROM's
3D	Clear the shutdown flag to 0; Disable gate A20 and enable memory wrap in real mode
3E	Set vectors for interrupts 3B-3F; Clear post fail bit in CMOS RAM
3F	Call interrupt 19 boot loader

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Akustische Fehlermeldungen (Beep Codes)

AMI BIOS

Töne	Fehler	Beschreibung
1*	DRAM refresh failure	The programmable interrupt timer or programmable interrupt controller has probably failed
2*	Memory parity error	A memory parity error has occurred in the first 64K of RAM. The RAM IC is probably bad
3*	Base 64K memory failure	A memory failure has occurred in the first 64K of RAM. The RAM IC is probably bad
4*	System timer failure Processor	The system clock/timer IC has failed or there is a memory error in the first bank of memory
5*	error	The system CPU has failed
6*	Gate A20 failure	The keyboard controller IC has failed, which is not allowing Gate A20 to switch the processor to protected mode. Replace the keyboard controller
7*	Virtual mode processor exception error	The CPU has generated an exception error because of a fault in the CPU or motherboard circuitry
8*	Display memory read/write error	The system video adapter is missing or defective
9*	ROM checksum error	The contents of the system BIOS ROM does not match the expected checksum value. The BIOS ROM is probably defective and should be replaced
10*	CMOS shutdown register read/write error	The shutdown for the CMOS has failed
11*	Cache error	The L2 cache is faulty
1*lang, 2*kurz	Failure in video system	An error was encountered in the video BIOS ROM, or a horizontal retrace failure has been encountered
1*lang, 3*kurz	Memory test failure	A fault has been detected in memory above 64KB
1*lang, 8*kurz	Display test failure	The video adapter is either missing or defective
2*kurz	POST Failure	One of the hardware testa have failed
1*lang	POST has passed all tests	

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Award BIOS

Töne	Fehler	Beschreibung
1*lang, 2*kurz	Video adapter error	Either video adapter is bad or is not seated properly. Also, check to ensure the monitor cable is connected properly.
Endlos	Memory error	Check for improperly seated or missing memory.
1*lang, 3*kurz Piep-	No video card or bad video RAM	Reseat or replace the video card.
Ton mit hoher Frequenz	Overheated CPU	Check the CPU fan for proper operation. Check the case for proper air flow.
Piep-Ton, wiederholend hoch/tief	CPU	Either the CPU is not seated properly or the CPU is damaged. May also be due to excess heat. Check the CPU fan or BIOS settings for proper fan speed.

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Compaq BIOS

Töne	Fehler	Beschreibung
1*kurz	No error	System is booting properly
1*lang, 1* kurz	BIOS ROM checksum error	The contents of the BIOS ROM to not match the expected contents. If possible, reload the BIOS from the PAQ
2*kurz	General error	Unknown
1*lang, 2* kurz	Video error	Check the video adapter and ensure it's seated properly. If possible, replace the video adapter
7 Pieptöne		
1*lang,1*kurz, 1*lang,1*kurz, AGP video		The AGP video card is faulty. Reseat the card or replace it outright. This beep pertains to Compaq Deskpro systems
Pause,1*lang, 1*kurz, 1*kurz		
1 langer Endloston	Memory error	Memory error. Bad RAM. Replace and test
1*kurz, 2*lang	Bad RAM	Reseat RAM then retest; replace RAM if failure continues

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IBM Desktop BIOS

Töne	Fehler	Beschreibung
1*kurz	Normal POST	System is booting properly
2*kurz	Initialization error	Error code is displayed
1*lang, 1*kurz	System board error	
1*lang, 2*kurz	Video adapter error	
1*lang, 3*kurz	EGA/VGA adapter error	
3*lang	3270 keyboard adapter error	
Endlos	Power supply error	Replace the power supply
999s	Power supply error	Replace the power supply
Kein Ton	Power supply	Replace the power supply

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IBM Thinkpad BIOS

Töne/Fehler	Beschreibung
Dauerhaftes Piepen	System board failure
Ein Ton; nichtlesbarer, dunkler oder blinkender LCD	LCD connector problem; LCD backlight inverter failure; video adapter faulty; LCD assembly faulty; System board failure; power supply failure
Ein Ton; Meldung "Unable to access boot source"	Boot device failure; system board failure
1*lang, 2*kurz	System board failure; Video adapter problem; LCD assembly failure
1* lang, 4*kurz	Low battery voltage
Ein Ton pro Sekunde	Low battery voltage
Zwei kurze Töne mit Fehlermeldung auf LCD	POST error message
Zwei kurze Töne	System board failure

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Phoenix ISA/MCA/EISA BIOS (v3 & v4)

Töne	Fehler	Beschreibung
1-1-2	CPU test failure	The CPU is faulty. Replace the CPU
1*tief-1-2	System board select failure	The motherboard is having an undetermined fault. Replace the motherboard
1-1-3	CMOS read/write error	The real time clock/CMOS is faulty. Replace the CMOS if possible
1*tief-1-3	Extended CMOS RAM failure	The extended portion of the CMOS RAM has failed. Replace the CMOS if possible
1-1-4	BIOS ROM checksum error	The BIOS ROM has failed. Replace the BIOS or upgrade if possible
1-2-1	PIT failure	The programmable interrupt timer has failed. Replace if possible
1-2-2	DMA failure	The DMA controller has failed. Replace the IC if possible
1-2-3	DMA read/write failure	The DMA controller has failed. Replace the IC if possible
1-3-1	RAM refresh failure	The RAM refresh controller has failed
1-3-2	64KB RAM failure	The test of the first 64KB RAM has failed to start
1-3-3	First 64KB RAM failure	The first RAM IC has failed. Replace the IC if possible
1-3-4	First 64KB logic failure	The first RAM control logic has failed
1-4-1	Address line failure	The address line to the first 64KB RAM has failed
1-4-2	Parity RAM failure	The first RAM IC has failed. Replace if possible
1-4-3	EISA fail-safe timer test	Replace the motherboard
1-4-4	EISA NMI port 462 test	Replace the motherboard
2-1-1	64KB RAM failure	Bit 0; This data bit on the first RAM IC has failed. Replace the IC if possible
2-1-2	64KB RAM failure	Bit 1; This data bit on the first RAM IC has failed. Replace the IC if possible
2-1-3	64KB RAM failure	Bit 2; This data bit on the first RAM IC has failed. Replace the IC if possible
2-1-4	64KB RAM failure	Bit 3; This data bit on the first RAM IC has failed. Replace the IC if possible
2-2-1	64KB RAM failure	Bit 4; This data bit on the first RAM IC has failed. Replace the IC if possible
2-2-2	64KB RAM failure	Bit 5; This data bit on the first RAM IC has failed. Replace the IC if possible
2-2-3	64KB RAM failure	Bit 6; This data bit on the first RAM IC has failed. Replace the IC if possible
2-2-4	64KB RAM failure	Bit 7; This data bit on the first RAM IC has failed. Replace the IC if possible
2-3-1	64KB RAM failure	Bit 8; This data bit on the first RAM IC has failed. Replace the IC if possible
2-3-2	64KB RAM failure	Bit 9; This data bit on the first RAM IC has failed. Replace the IC if possible
2-3-3	64KB RAM failure	Bit 10; This data bit on the first RAM IC has failed. Replace the IC if possible
2-3-4	64KB RAM failure	Bit 11; This data bit on the first RAM IC has failed. Replace the IC if possible
2-4-1	64KB RAM failure	Bit 12; This data bit on the first RAM IC has failed. Replace the IC if possible
2-4-2	64KB RAM failure	Bit 13; This data bit on the first RAM IC has failed. Replace the IC if possible
2-4-3	64KB RAM failure	Bit 14; This data bit on the first RAM IC has failed. Replace the IC if possible
2-4-4	64KB RAM failure	Bit 15; This data bit on the first RAM IC has failed. Replace the IC if possible

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3-1-1	Slave DMA register failure	The DMA controller has failed. Replace the controller if possible
3-1-2	Master DMA register failure	The DMA controller had failed. Replace the controller if possible
3-1-3	Master interrupt mask register failure	The interrupt controller IC has failed
3-1-4	Slave interrupt mask register failure	The interrupt controller IC has failed
3-2-2	Interrupt vector error	The BIOS was unable to load the interrupt vectors into memory. Replace the motherboard
3-2-3	Reserved	
3-2-4	Keyboard controller failure	The keyboard controller has failed. Replace the IC if possible
3-3-1	CMOS RAM power bad	Replace the CMOS battery or CMOS RAM if possible
3-3-2	CMOS configuration error	The CMOS configuration has failed. Restore the configuration or replace the battery if possible
3-3-3	Reserved	
3-3-4	Video memory failure	There is a problem with the video memory. Replace the video adapter if possible
3-4-1	Video initialization failure	There is a problem with the video adapter. Reseat the adapter or replace the adapter if possible
4-2-1	Timer failure	The system's timer IC has failed. Replace the IC if possible
4-2-2	Shutdown failure	The CMOS has failed. Replace the CMOS IC if possible
4-2-3	Gate A20 failure	The keyboard controller has failed. Replace the IC if possible
4-2-4	Unexpected interrupt in protected mode	This is a CPU problem. Replace the CPU and retest
4-3-1	RAM test failure	System RAM addressing circuitry is faulty. Replace the motherboard
4-3-3	Interval timer channel 2 failure	The system timer IC has failed. Replace the IC if possible
4-3-4	Time of day clock failure	The real time clock/CMOS has failed. Replace the CMOS if possible
4-4-1	Serial port failure	A error has occurred in the serial port circuitry
4-4-2	Parallel port failure	A error has occurred in the parallel port circuitry
4-4-3	Math coprocessor failure	The math coprocessor has failed. If possible, replace the MPU

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Töne	Beschreibung
1-1-1-3	Verify real mode
1-1-2-1	Get CPU type
1-1-2-3	Initialize system hardware
1-1-3-1	Initialize chipset registers with initial values
1-1-3-2	Set in POST flag
1-1-3-3	Initialize CPU registers
1-1-4-1	Initialize cache to initial values
1-1-4-3	Initialize I/O
1-2-1-1	Initialize power management
1-2-1-2	Load alternative registers with initial POST values
1-2-1-3	Jump to UserPatch0
1-2-2-1	Initialize timer initialization
1-2-3-1	8254 timer initialization
1-2-3-3	8237 DMA controller initialization
1-2-4-1	Reset Programmable Interrupt Controller
1-3-1-1	Test DRAM refresh
1-3-1-3	Test 8742 Keyboard Controller
1-3-2-1	Set ES segment register to 4GB
1-3-3-1	Autosize DRAM
1-3-3-3	Clear 512K base memory
1-3-4-1	Test 512K base address lines
1-3-4-3	Test 51K base memory
1-4-1-3	Test CPU bus-clock frequency
1-4-2-1	CMOS RAM read/write failure (this commonly indicates a problem on the ISA bus such as a card not seated)
1-4-2-4	Reinitialize the chipset
1-4-3-1	Shadow system BIOS ROM
1-4-3-2	Reinitialize the cache
1-4-3-3	Autosize the cache
1-4-4-1	Configure advanced chipset registers
1-4-4-2	Load alternate registers with CMOS values
2-1-1-1	Set initial CPU speed
2-1-1-3	Initialize interrupt vectors
2-1-2-1	Initialize BIOS interrupts
2-1-2-3	Check ROM copyright notice
2-1-2-4	Initialize manager for PCI Options ROMs
2-1-3-1	Check video configuration against CMOS
2-1-3-2	Initialize PCI bus and devices
2-1-3-3	initialize all video adapters in system
2-1-4-1	Shadow video BIOS ROM
2-1-4-3	Display copyright notice
2-2-1-1	Display CPU type and speed
2-2-1-3	Test keyboard
2-2-2-1	Set key click if enabled
2-2-2-3	Enable keyboard
2-2-3-1	Test for unexpected interrupts
2-2-3-3	Display prompt "Press F2 to enter setup"
2-2-4-1	Test RAM between 512K and 640K
2-3-1-1	Test expanded memory
2-3-1-3	Test extended memory address lines
2-3-2-1	Jump to UserPatch1
2-3-2-3	Enable external and CPU caches
2-3-2-3	Configure advanced cache registers
2-3-3-1	Enable external and CPU caches
2-3-3-2	Initialize SMI handler
2-3-3-3	Display external cache size
2-3-4-1	Display shadow message

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2-3-4-3	Display non-disposable segments
2-4-1-1	Display error messages
2-4-1-3	Check for configuration errors
2-4-2-1	Test real-time clock
2-4-2-3	Check for keyboard errors
2-4-4-1	Setup hardware interrupt vectors
2-4-4-3	Test coprocessor if present
3-1-1-1	Disable onboard I/O ports
3-1-1-3	Detect and install external RS232 ports
3-1-2-1	Detect and install external parallel ports
3-1-2-3	Reinitialize onboard I/O ports
3-1-3-1	Initialize BIOS Data Area
3-1-3-3	Initialize Extended BIOS Data Area
3-1-4-1	Initialize floppy controller
3-2-1-1	Initialize hard disk controller
3-2-1-2	Initialize local bus hard disk controller
3-2-1-3	Jump to UserPatch2
3-2-2-1	Disable A20 address line
3-2-2-3	Clear huge ES segment register
3-2-3-1	Search for option ROMs
3-2-3-3	Shadow option ROMs
3-2-4-1	Setup power management
3-2-4-3	Enable hardware interrupts
3-3-1-1	Set time of day
3-3-1-3	Check key lock
3-3-3-1	Erase F2 prompt
3-3-3-3	Scan for F2 keystroke
3-3-4-1	Enter SETUP
3-3-4-3	Clear in-POST flag
3-4-1-1	Check for errors
3-4-1-3	POST done - prepare to boot operating system
3-4-2-1	One beep
3-4-2-3	Check password (optional)
3-4-3-1	Clear global descriptor table
3-4-4-1	Clear parity checkers
3-4-4-3	Check virus and backup reminders
4-1-1-1	Try to boot with INT 19
4-2-1-1	Interrupt handler error
4-2-1-3	Unknown interrupt error
4-2-2-1	Pending interrupt error
4-2-2-3	Initialize option ROM error
4-2-3-1	Shutdown error
4-2-3-3	Extended Block Move
4-2-4-1	Shutdown 10 error
4-2-4-3	Keyboard Controller failure (most likely problem is with RAM or cache unless no video is present)
4-3-1-3	Initialize the chipset
4-3-1-4	Initialize refresh counter
4-3-2-1	Check for Forced Flash
4-3-2-2	BIOS ROM is OK
4-3-2-4	Do a complete RAM test
4-3-3-1	Do OEM initialization
4-3-3-2	Initialize interrupt controller
4-3-3-3	Read in bootstrap code
4-3-3-4	Initialize all vectors
4-3-4-2	Initialize the boot device
4-3-4-3	Boot code was read OK

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